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STEEL

The Magazine of Metalworking and Metalproducing

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M-R-C ULTRA SUPER-PRECISION BEARINGS

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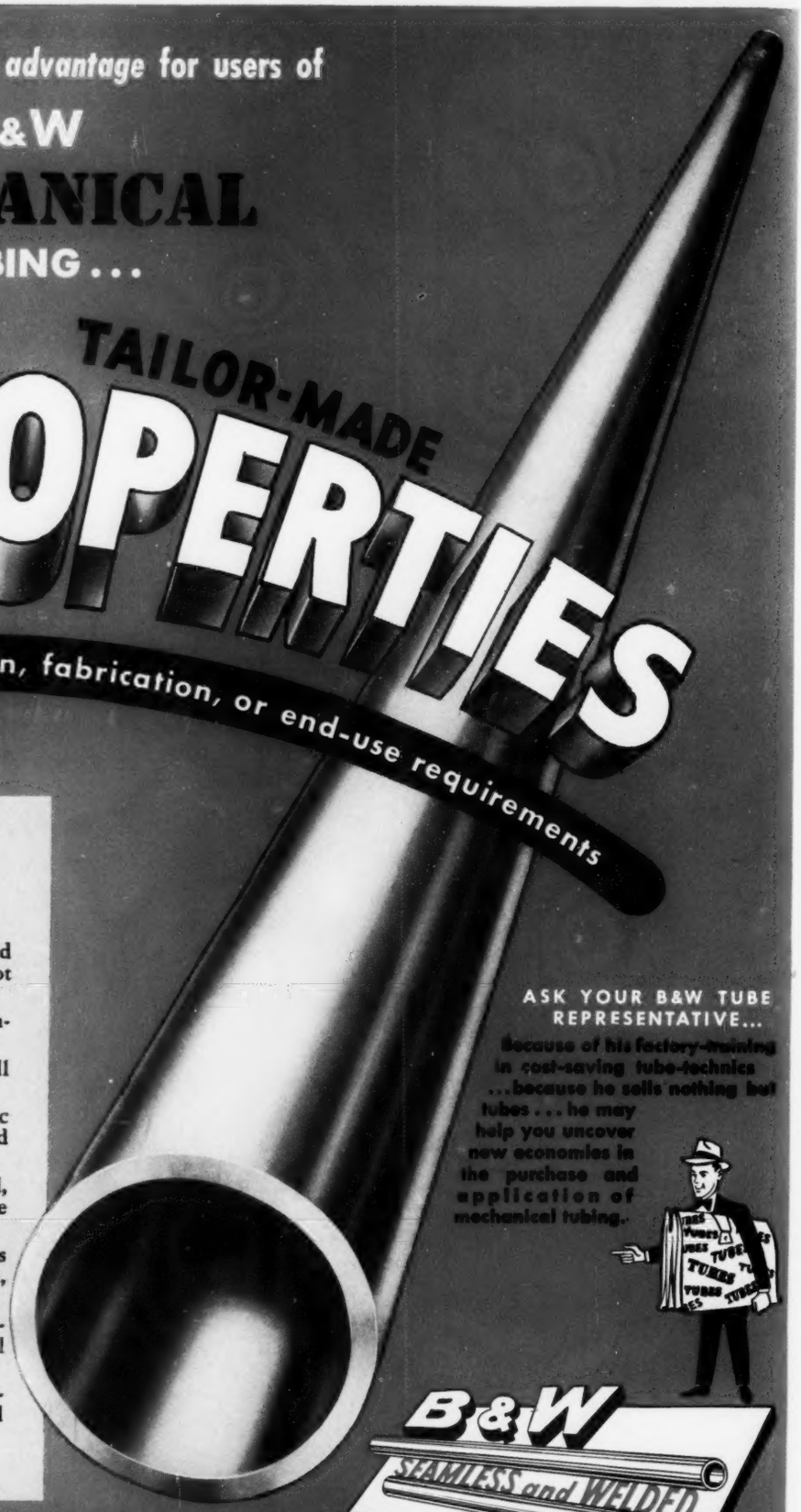

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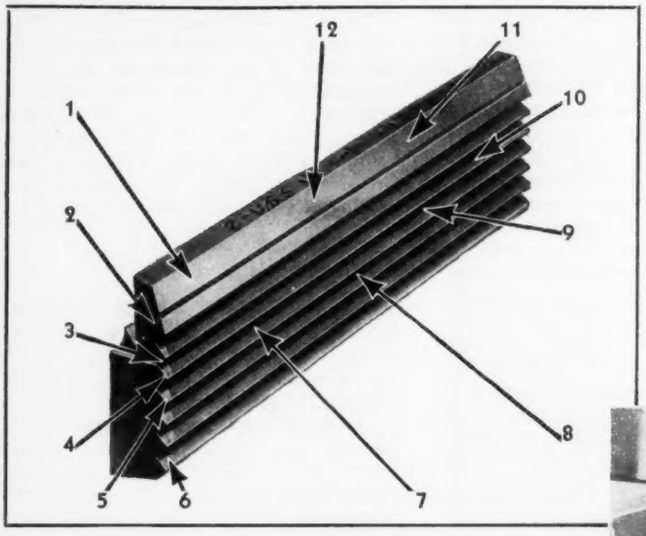

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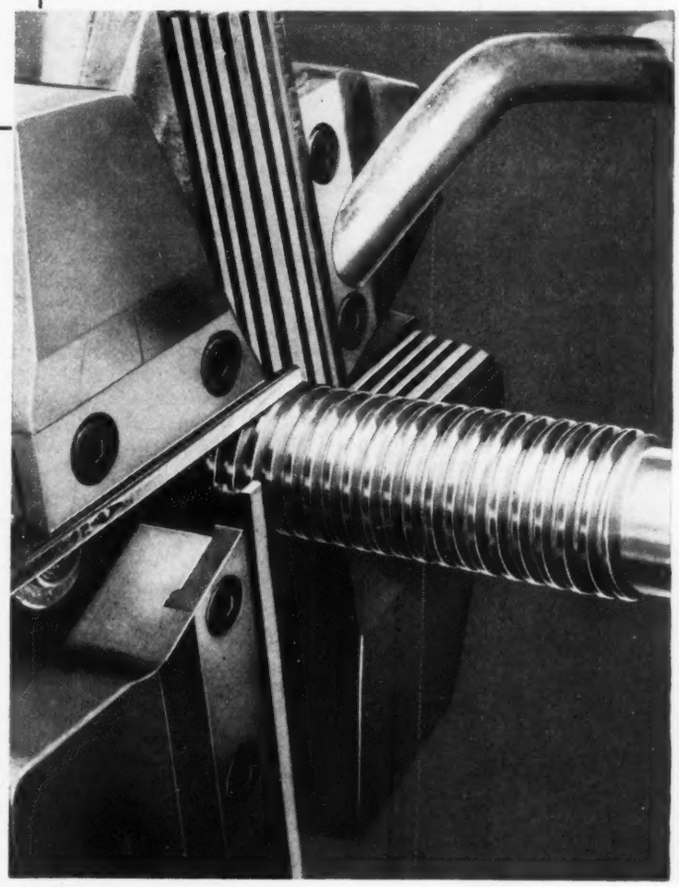

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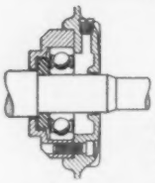

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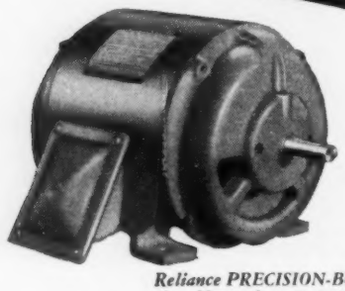

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We Play Engineer

We missed the high-ball signal for GE's More-Power-to-America special train in New York last spring, so when it arrived here in Cleveland we immediately hied ourselves over to spend a pleasant and instructive hour and a half examining electronic bloodhounds, thy-mo-trol adjustable speed drives and pushing control buttons on the dozen and one working models demonstrating how the wonders of electricity make it possible for industry to turn out better products easier. Being train lovers ourselves, we got a big kick out of operating the full-size controls for a miniature yard engine which neatly switches cars from one track to another. Try it, when the GE special comes to your town. It will be on the road until next July, Manager Cliff Falkenau tells us.

Deflated Ego

We were mighty impressed when we received an official looking punched card soliciting our subscription for a popular magazine of general circulation. From these punches we assumed that all the magazine would do when we sent in our check would be to run us through one of their business machines and out we'd come neatly catalogued as to name, address, sex, occupation, etc.

We had our IBM department for STEEL run the card through to see just where we stood with these people. The punches read: "Short Term Offer," nothing else.

STEEL's IBM department, incidentally, has detailed information and punch cards on over 40,000 metalworking plants.

The Distaff Side

Not being of an inventive turn of mind we constantly marvel at things mechanical. We are fascinated by American ingenuity which seizes an idea and adds to it. We've seen TV-viewing chairs, swivel-top video tables and ultra modern television lamps. We admired, too, the host of gadgets that our distaff side has scattered in the forward compartment of our automobile—a cleaning pad holder, a stop-light prism, a canvas baby chair.

We're a little concerned, though, about a recent device that will be added to and by the distaff side. It's a "vanity drawer" that takes the place of the glove compartment in the new Packard. Art Allen, Detroit editor, gave us a turn when he said it likely will become standard throughout the industry. After watching the little woman trying to see if her eyebrow shadow is even on both sides while wending her way through downtown traffic, we're a little aghast at the prospect of seeing her reaching for the vanity drawer while driving.

Evolution

We hate radical change and most people we've met seem to feel the same. We like our changes to be undisturbingly gradual. Looking through copies of STEEL dated a little more than a year ago and comparing them with the latest issues made us realize that like the automakers the editors have gone through a process of evolution not revolution. Further investigation reveals that Assistant Editor Ed Birkner and the art department's Bill Kellogg slipped one over on us. Although each issue looks like an old friend, the overall result is a facelifting that makes the current issue more pleasing to look at and easier to read than the one of a year ago.

Puzzle Corner

Charlton Reynders of Milton, Mass., gently chides us for offering too easy a puzzle in the Sept. 11 issue. We wouldn't know. They're all tough for us. But Charlton says the right answer is ½ second, which agrees with the answer in the back of the book. J. S. Vauple of Barium Steel and several score others agree. But we got a lot of other answers, too.

Maybe you can tell us how old Diophantus was when he died. God granted him to be a boy for the sixth part of his life, and adding a twelfth part to this, He clothed his cheeks with down. He lit him the light of wedlock after a seventh part, and five years after his marriage He granted him a son. After attaining the measure of half his father's life, fate took the son. After consoling his grief for four years, Diophantus ended his life.

Shrdlu

(Editorial Index—page 33)

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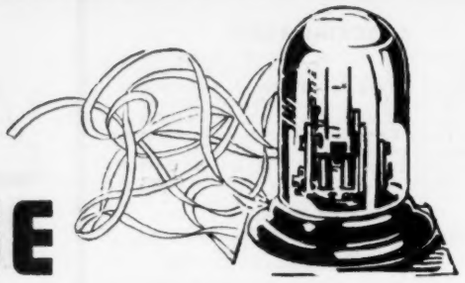

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September 25, 1950

Measuring Stick

Today one of the most difficult problems confronting the American people is that of deciding the degree to which the federal government should take a paternal interest in its citizens, participate in their daily living, offer them "security" and provide welfare services alike for the weak and the strong. In his new book "How To Stay Rich" (Farrar, Straus & Co., New York), Ernest L. Klein discusses this problem in a manner which should command the attention of every American industrialist.

Mr. Klein points out that the United States, under the system of democratic American capitalism, has developed an economy based upon private property and individual enterprise for profit. This system has made us rich in comparison with the lot of people living under any other system. Also our system has demonstrated throughout 150 years an amazing flexibility and adaptability which has enabled it to meet every social and economic requirement of the past. Mr. Klein is confident that these characteristics of flexibility and adaptability will enable it to meet successfully every challenge of the future.

However, if the American people assume that some of the benefits promised in the so-called "welfare state" are legitimate social or economic requirements, then we will pursue a course that will lead us inevitably into a totalitarian form of government. How can we know which "welfare" proposals can be undertaken by our system without destroying it?

Mr. Klein has devised a measuring stick for this purpose. It assumes that there are four essential props to our system—private property, individual enterprise, the profit motive, and the freedom and value of the individual. Any new proposal which seriously endangers any one of these four props endangers the entire democratic American capitalistic structure and therefore should not be adopted. Mr. Klein applies this measuring stick to several current proposals and shows why some are sound and worthy while others are unsound and dangerous.

Anyone who reads this book will find it provocative of the kind of thinking that must become more prevalent if we are going to preserve our excellent system. All of us will profit from a better appreciation of the fine characteristics of this system, which are emphasized forcefully in Mr. Klein's book.

* * *

DEATH BY 1 PER CENT: Failure of Britain's Conservatives and Liberals to thwart the Labor government's move to nationalize the iron and steel industry paves the way for a unique set-up. Early next year the larger properties will be taken over by Iron & Steel Corp. of Great Britain, a government agency. Specifically, any concern producing over 20,000 tons of crude steel annually, together with its integrated mills, forge shops, foundries and other departments will become state-owned.

Exempted from nationalization will be a large percentage of nonintegrated mills and processing plants representing 45 per cent of the total gross value of output of the industry. These exempted companies will be in direct competition with state-owned properties. Also, many of them will be dependent upon government-owned facilities or upon imports for pig iron and ingot, semifinished and rolled steel for their fabricating and processing requirements.

One can visualize all sorts of complications

(OVER)

AS THE EDITOR VIEWS THE NEWS

from such a set-up. It is possible that after struggling with a system in which 55 per cent of the industry is state-owned and 45 per cent is privately-owned, it will become apparent that an industry, as in the case of the people of a nation, cannot long remain half-slave and half-free.

It is deplorable that 6 votes out of 606—0.990099 or less than 1 per cent—can pronounce the death sentence on the private operation of a basic industry. —p. 52

* * *

HASTE MAKES WASTE: It's almost anybody's guess as to what the average small or medium-sized metalworking establishment should do to be prepared for the present emergency. Nevertheless, a few suggestions are being offered which seem to make sense.

George W. Cannon, member of the advisory committee on foundry practices of the Munitions Board, advises companies to take inventory of what they have and can do. "Know what you can make outside of your regular lines." L. E. Roark, vice president of National Foundry Association, offers realistic advice on manpower problems. He says, "Don't expect any breaks on the draft. The men you want are the ones the military also wants. You'll come out second best."

This is true and it is a matter of grave concern in some industries. Men who have special "know-how" are being rushed into routine jobs in the military. In our need for haste, we are making grave mistakes in the distribution of special talent. —pp. 42, 76

* * *

BUILD UP YOUR CASE: Top question in the minds of distributors of metalworking products is this: My suppliers are tightening up on my orders. They are asking me what is the end-use of the materials I am ordering. Now that they are screening my orders so carefully, why should I not become more discriminating in the allocation to customers of my all too meager stocks?

The answer is that discrimination may become the order of the day. The time is not far off when your ability to get steel, copper, aluminum, lead, zinc, etc. will depend largely upon the proof you can provide that a specific percentage of your customers is engaged in defense work.

If you are an intermediary in the distribution of metals from producer to consumer, make an analysis of the end-use of materials you sell. That information will be invaluable in determining the tonnage you can expect from your suppliers. —pp. 41, 42, 43

* * *

TESTS FOR COOLANTS: When is a test not a test? An Ohio company wanted to compare the premium-priced cutting fluid it was using with a few cheaper coolants. It asked competent operators to count the number of work pieces machined between grinds of the cutting tools for each of the coolants entered in the test. After several months, the results showed the high-priced coolant to be superior.

Then somebody wondered if the fact the premium coolant had a distinctive color could be a factor in the test. A colorless fluid costing half as much as the premium grade was secretly dyed the color of the high-priced product. Tests were run again and this time the operators said the doped product compared favorably with its higher-priced competitor.

Now the company tests coolants by accurately determining the loss of weight in a tool after a predetermined number of work pieces has been machined. —p.77

* * *

SELF-CENTERING ROLL: E. T. Lorig, chief of the senior engineering staff of Carnegie-Illinois Steel Corp., has invented a self-centering roll which may have wide application on run-out tables, feed and guide rolls, gravity conveyors, belt pulleys and similar installations. The roll, which employs the principle of "planer action," is slightly crowned and cut transversely at the center, both halves being fixed to rotate as a unit. While the working surfaces of the two parts are approximately horizontal, the axes are at an angle. Therefore the lines of force in both halves twist evenly toward the center in the direction of movement. This confers a self-centering action on any materials passing over the rolls.

Self-centering rolls are being manufactured at C-I's Johnstown Works and experiments on them are being conducted on conveyor installations of wide variety at a number of plants of U. S. Steel's subsidiary companies. —p. 83

E. L. Shaner

EDITOR-IN-CHIEF

News Summary

SLOW START—Private allocations systems inaugurated by producers of steel, aluminum and other metals may eventually become the basis for the National Production Authority's public priority program, but the shift to government allocations, particularly of steel, is weeks away (p. 41). NPA doesn't think the steel shortage is acute enough to require drastic action. The agency is more concerned with some of the alloying elements that go into steel and contemplates conservation orders for nickel and columbium. Steel men are worried about alloys too. Now in the development stage is a series of new emergency chromium-nickel-manganese steels even leaner than the National Emergency steels of the last war. NPA is also studying titanium. Industry may be asked to produce more than 100,000 tons of the metal annually for aircraft and other applications.

GOOD INTENTIONS— Don't expect any miracles from the first regulation issued by NPA. It's a loosely worded directive (p. 41) requiring that inventories of 32 classes of materials, including practically all the metals, shall be held to a "practical working minimum."

REMEDIES— Despite Washington opinion, the steel shortage is acute. All steel companies are taking their own measures to forestall hoarding by going over orders with a fine-tooth comb. U. S. Steel Corp. (p. 44) is among the producers bringing down iron ore by rail to speed pig iron production. Other stopgap steps are being taken to ease the immediate scarcities, but little hope for much relief is in sight now. But the future looks better. Stepped-up expansion in the steel industry means that ingot production will be at the rate of 108-110 million tons annually by Dec. 31, 1952 (p. 41). The long-term picture for domestic iron ore is brighter now that Republic Steel Corp. and Armco Steel Corp. have teamed up to process taconite into usable iron ore (p. 44).

NO BOTTLENECK— Expect quicker relief from aluminum shortages than from steel (p. 43). The U. S. aluminum industry's capacity is about 1.4 billion pounds a year, but it will be increased by 200 million pounds within a year by expansions and rehabilitation programs for government equipment now in progress. The U. S. produced only 327 million pounds of primary aluminum in 1939.

THE TEMPO HOLDS— No wonder there are materials shortages when industrial production continues at or near the record pace (pp. 58-61). STEEL's industrial production index for the week ended Sept. 16 hit 218, only 1 point below the alltime high in June. Steelmaking holds at 101 per cent of capacity. Auto and truck assemblies are hovering near the 190,000 a week mark. Expenditures for new plant and equipment are rising and should reach about $17.9 billion for 1950, not far from the record $19.2 billion spent by industry in 1948.

PUZZLE IN PRICES— Auto makers are faced with the delicate problem of prices (p. 55). They say they'll hold the line, but labor, component, nonferrous metal and rubber prices are all rising. Detroit will probably solve the problem by leaving the standard model prices about the same and boosting deluxe quotations. Bulk of the present car-buying demand is for deluxe models.

THE AXE FALLS— The British iron and steel industry will be nationalized (p. 52). The Labor party has won its point by six votes and a board has been set up to run the industry by next Jan. 1 or as soon thereafter as possible. Even some members of the Labor party may have welcomed an out on the thorny problem of taking over the steel industry, but the party was too far committed, had too much prestige to lose by backing down.

HERE AND THERE IN INDUSTRY— The newly formed Ohio River Steel Corp. has bought the former Ohio works of Follansbee Steel Corp. (p. 45) . . . Thompson Products Inc. and Perfect Circle Corp. will merge (p. 46) . . . Harry M. Moses has resigned his position as president of U. S. Steel's coal-producing subsidiary to devote his full time as the coal operators' representative in dealing with John L. Lewis (p. 44) . . . National Machine Tool Builders' index went to 307.3 in August. In July the index was 253.1.

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STEEL
A PENTON PUBLICATION

Procurement Will Be a Matter of Every Man for Himself

Steel Allocations? Not Yet

Procurement of metals to continue on catch-as-catch-can basis. Weeks will be required to determine allocations plans, set up organization, check personnel for loyalty

THE catch-as-catch-can system of procurement for steel products and other scarce metals will continue this autumn. It will be weeks before an effective allocations organization can be set up. Meanwhile, metalworking companies will buy on an every man-for-himself basis.

The reasons are these: 1. Washington does not believe steel shortages have yet become acute. 2. A lot of planning and study will be required to establish a workable allocations system. 3. All the personnel in such an organization must undergo security checks which take time.

No Scarcity? — Steel buyers who are beating the bushes in an effort to get enough steel, aluminum, nickel and other metals to maintain their plant operations stand ready to give Washington a hot argument on the supply question. But Washington knows that all its military orders to date have been taken care of quickly and that producers are ready to co-operate in the execution of the essential civilian programs. Lack of steel has not yet held up any phase of the defense program.

Blueprints Are Drawn — The National Production Authority is continuing its explorations in the field of materials. Last week it issued its first regulation, providing for inventory control of 32 scarce materials (See the story on p. 42). An order now being prepared will list the uses of scarce materials that will be entitled to priorities.

The steel allocations planning is going forward. Last Tuesday, five steel mill representatives met with NPA officials to discuss informally what sort of an organization should be created in the Steel Division of NPA to handle allocations and who should be in charge of the division. Steel men in the conference were David F. Austin, U. S. Steel; J. M. Schlendorf, Republic; W. E. Watson, Youngstown Sheet & Tube; Paul Mackall, Bethlehem; and D. B. Carson, Sharon Steel.

A Plan Is Made—Out of last week's meeting came a tentative plan that will be submitted to the sales vice presidents of steel companies who will be organized as the Steel Products Advisory Committee. This meeting of the steel products committee originally was set for Sept. 27 but postponement was necessary to allow time for security clearance.

Producer Allocations—Meanwhile, producers of steel and nonferrous metals are rationing or allocating their products to customers. Steel companies, of course, have been doing this practically ever since World War II ended. Now Dow Chemical is allocating magnesium. Aluminum producers are allocating their products. International Nickel has been rationing nickel to consumers since mid-summer. Copper, lead and zinc producers have similar allocations plans.

The Problem of Alloys—Supply and demand conditions in the aluminum, zinc, and alloying materials are being canvassed in meetings of industry and NPA representatives.

Wars increase the demand for alloy steels, often shut off the sources for alloying elements. How to handle this was explored last week by representatives of Republic, Allegheny Ludlum, U. S. Steel, Babcock & Wilcox Tube Co., Armco, and Crucible.

Alcoa, Reynolds and Kaiser people discussed what to do about aluminum. New Jersey Zinc, American Zinc, Anaconda Copper, American Metal, U. S. Smelting, American Smelting, St. Joseph Lead, and Eagle-Picher were represented at the zinc meeting.

More Steel Coming

Expansion will be bigger, faster. Capacity to hit 108-110 million tons by 1952

STEEL capacity will be expanded to 108 million tons annually by Dec. 31, 1952. It may even reach 110 million tons by that time.

Expansion projects will be accelerated and enlarged faster as result of increased steel demands growing out of the Korean war.

Steel industry leaders meeting with Secretary of Commerce Sawyer Sept. 11 were asked to take a new look at plans then existing for addition of about 5 million tons which would have brought capacity up to 105,750,000 tons by the end of 1952.

Bigger Sooner—Most spectacular addition to the newly revised plans is the much-heralded U. S. Steel plant at Morrisville, Pa., across the Delaware river from Trenton, N. J. Construction will be started just as soon as engineering work can be completed.

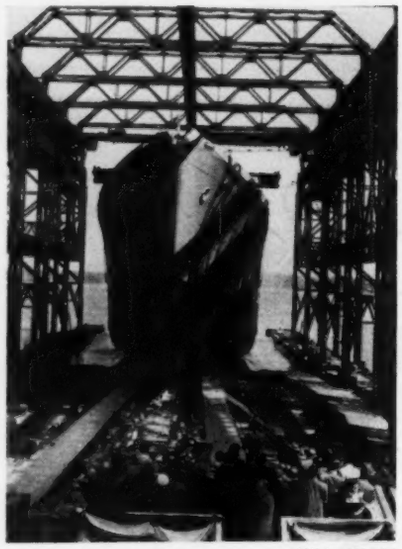
U. S. Steel's early plans called only

for finishing mills at Morrisville. Later it was tentatively decided to build an integrated mill with ingot capacity of less than 1 million tons. New plans call for capacity of 1.7 million tons which means that it will eclipse even the giant Geneva, Utah, works built during the war in the record time of 25 months.

Ore Project Speeded—In addition to the large open-hearth shop, the plant will have two blast furnaces with capacity of 1 million tons of pig iron and a battery of coke ovens. Orders now are being placed for mining and handling equipment so that all-water ore shipments from Venezuela can be started by late 1952 or early 1953. Additional coke required will be shipped from Pittsburgh.

Finishing mill equipment will include an 80-inch, 6-stand hot strip mill which will be readily convertible to production of ship plates should the government decide to build a fleet of fifty 25-knot cargo carriers capable of outrunning Soviet submarines.

Needed: Faster Write-offs — New, higher taxes in the offing pose a financing problem, not only for U. S. Steel but other companies readying new plants. The problem will be solved if the government grants certificates of necessity permitting 5-year write-offs as was done in the last war.



Wide World

UNDER THE WIRE: The S. S. *Constitution* slides down the ways at Bethlehem Shipbuilding Co., Quincy, Mass. The 26,000-ton American Export Lines' craft is the second of the firm's thousand-passenger liners. Because they were so far along in construction they will be finished as commercial vessels, but the Federal Maritime Board and Maritime Administration say four of six vessels they were building for private ownership and operation under subsidy arrangements will be finished as troop transports. Among them is the 48,000-ton super liner to be named the S. S. *United States*
(Steel, April 24, p. 50)

What Inventories?

Metalworking executives insist stocks not excessive. See NPA order having little effect

INVENTORY controls—the first regulation issued by the National Production Authority—is having little impact on the metalworking industries. Few companies have material stocks which they consider to be above the "minimum working inventory" defined in the order. Many contend they have less.

Purchasing agents and other metalworking executives doubt that the inventory control order will ease the materials situation by forcing holders of excess inventories to give them up or to withdraw from the market until they are used. The order is loosely worded and the NPA as yet has no policing staff to enforce the provisions of the regulation. They give the NPA credit for good intentions, admit that the moral effect of the order may be good, but believe the practical effects will be slight.

What Is Practical Minimum?—The order (NPA Reg. 1) provides that inventories of 32 classes of critically short materials, including practically all the metals, shall be held to a "practical working minimum." This is defined as "the smallest quantity of material from which a person can reasonably meet his deliveries or supply his services on the basis of his currently scheduled method and rate of operation." The regulation does not restrict inventories to any time period.

Keep Records—The order does not require reports to the NPA but provides that records customarily kept of inventories, deliveries, receipts and uses must be retained. These must be submitted to NPA upon demand. The order specifies no particular accounting method or any addition to present accounting records.

Suppliers as well as purchasers are subject to the order. A supplier is prohibited from delivering materials if he knows or has reason to believe that his customer is not permitted to receive it under the terms of the order.

Stay in Line—NPA advises purchasers to promptly cancel, reduce or defer outstanding orders if current inventories are above the practical minimum. The same requirement applies where production schedules are adjusted because of changed operations, slowing or stopping of production. The order does not provide for disposal of excess inventory now on hand, but NPA points out that authority is provided in the Defense Production Act for the requisition of such excess inventory.

Order became effective Sept. 18.

Defense "Our Business"

Foundrymen believe mobilization program will govern business for years to come

FOUNDRY business will not be "as usual" for many years to come, a distinguished group of speakers warns the industry. Mobilization in greater or lesser degree will be in evidence, the draft will take many of its men, company control of raw materials supply will be lessened.

What foundries can do under these conditions is the subject their executives are exploring, being guided in their thinking by representatives on the Munitions Board and National Foundry Association officials. First meeting to develop their plans was held in Chicago Sept. 13.

Be Prepared—George W. Cannon, member of the advisory committee on foundry practices, Munitions Board, is convinced that foundries should be prepared for any eventuality. Recently returned from a seven-month tour of Europe, England and the Scandinavian countries, he warns "anything can happen." Some of his suggestions: "Take inventory of plant, tools and equipment. Know what you can make outside of your regular lines. Be prepared to employ women and make certain working conditions for them are the best."

Use Defense Act as Guide—The Defense Production Act of 1950 will be "an instrument of performance for you for the next few years," L. E. Roark, NFA executive vice president, advised. Officials of every foundry will need to examine it carefully and become aware of the areas in which it will affect them.

Right now "confusion is as great as it looks, if not greater," he confided. "Make plans now to make use of materials. Don't be surprised to have only hours of inventory."

Of manpower, Mr. Roark declared: "Don't expect any breaks on the draft. The men you want are the ones the military also wants. You'll come out second best." Employ and train older workers and women as quickly as possible, and mechanize to a far greater extent, he recommended.

Aluminum: It Won't Be a Bottleneck

U. S. aluminum industry is far better able to meet military needs today than it was at start of World War II, and capacity for producing primary metal is being expanded

WILL there be enough aluminum?

That's one of the many questions being raised today by metalworking companies as they try to appraise their materials outlook in the light of military preparedness.

It's a comforting answer the Aluminum Association has: The aluminum industry in the United States has sufficient operating capacity to fill promptly all military needs thus far announced and continue to produce large amounts of aluminum for civilian use. For total war, the industry has a primary metal capacity of more than four times its maximum in 1939.

Getting Bigger—The United States aluminum industry's capacity not only is big but it is being expanded. Present capacity is approximately 1.4 billion pounds a year but within a year it will be 200 million pounds larger when equipment sold from government stand-by plants to private producers comes into production. Another 125 million pounds of annual capacity could, if needed, be had by operating equipment remaining in the stand-by plants.

Currently the aluminum industry in the United States is operating at its capacity of 1.4 billion pounds annually. When the United States was on the threshold of World War II the country's production of primary aluminum was only 327 million pounds in 1939.

Needs Are Small—Defense officials have estimated that the military expansion program will require only about 200 million pounds of aluminum during the current fiscal year. This is only about 14 per cent of the present total output.

Because demand requires production at capacity, the industry has placed primary aluminum on an allocation system to help assure equitable distribution.

During World War II, the aluminum industry increased its capacity almost seven times—to a peak of 2350 million pounds a year. This peak capacity was utilized for a very short period during 1943, and in that year a total of about 1840 million pounds of primary aluminum were produced. By the second half of 1943, production exceeded military requirements.

Standing By—Some of the new aluminum plants during World War II were located in areas where only high-cost electric power was available. As soon as production exceeded requirements, the plants in high-power-cost areas were closed down. Some of them have been dismantled but others have been held in stand-by condition.

Aluminum requirements for a third World War probably would be greater than those of World War II, the Aluminum Association believes. Today's military planes are larger than those of World War II and require correspondingly larger amounts of aluminum; in addition other military uses for the metal have increased. Most of the military needs of aluminum, however, would be for aircraft; about 75 per cent of the total weight of modern military and civilian aircraft is aluminum.

Stumbling Blocks—Only two stumbling blocks remain in the way of increasing aluminum production in the United States: Bauxite and electric power.

Bauxite, the ore from which practically all aluminum now is produced, is a bottleneck to the extent that we do not have enough within our boundaries to meet all of our needs. However, large deposits of bauxite in nearby countries are available to the U. S. so that an ample supply seems assured to meet any contingency, says the Aluminum Association.

The electric power bottleneck is of a more serious nature. Recognizing this, the government is ready to order brownouts in some communities, especially in the Pacific Northwest, if necessary to maintain the aluminum output.

Ups Funds for Scarce Material

The Korean war has prompted the Economic Cooperation Administration to allocate twice as much money for its strategic materials program this fiscal year as it did in the last.

The agency estimates it will earmark more than $138 million, most of it in foreign currency, for purchase of critical metals and minerals for United States stockpiling and for mining projects in the overseas territories of Marshall Plan countries.

ECA uses few dollars to finance strategic material transactions, since it can use five per cent of the foreign currency which Marshall Plan nations deposit to match ECA dollar grants.

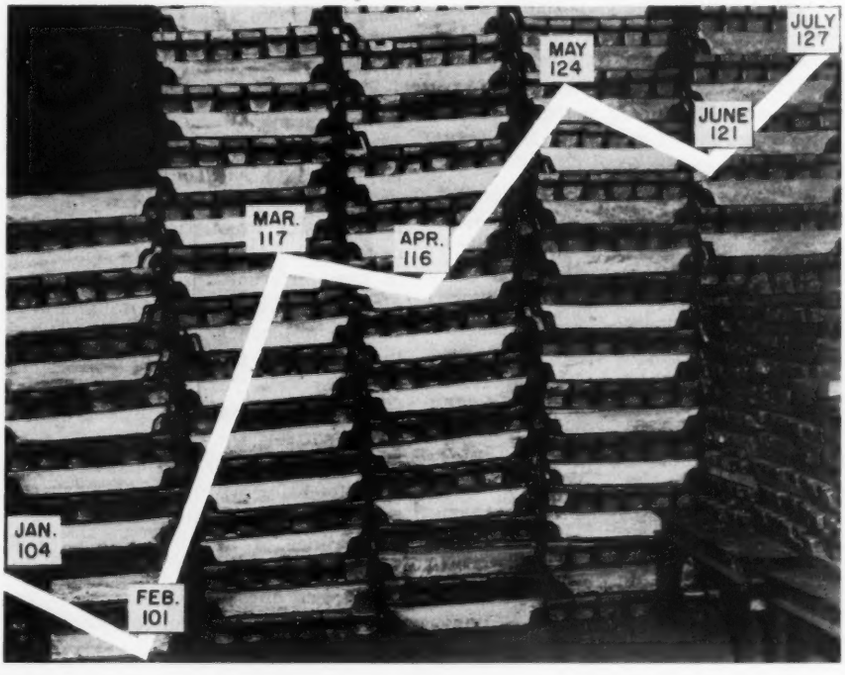
Nodular Iron Growth Predicted

Nodular iron castings output this year will total 15,000 to 20,000 tons, it is estimated by A. P. Gagnebin, International Nickel Co. of Canada Ltd., New York. The total will include castings ranging from a few ounces to more than 50 tons in weight.

Looking to the future, Mr. Gagnebin predicted that nodular iron production eventually will total 2 million to 5 million tons a year.

Primary Aluminum Output Going Up

(Figures in millions of pounds)



Republic, Armco Team Up for Taconite

These two steel producers buy 100 per cent ownership in Reserve Mining Co., which owns vast deposit of taconite, and plan plant to turn this material into iron ore

DEVELOPMENT of taconite reserves in the Mesabi region as sources of iron for the nation's blast furnaces moved a step further with joining of Republic Steel Corp. and Armco Steel Corp. in a taconite project. In the move, Republic and Armco jointly acquired in equal shares 100 per cent ownership of the stock of Reserve Mining Co. which controls a vast deposit of magnetic taconite at the eastern end of the Mesabi range in St. Louis county, Minnesota.

Armco previously held a one-third interest in Reserve Mining Co., Wheeling Steel Corp. held a third, and the rest was held by Cleveland Cliffs Iron Co. and Montreal Mining Co.

Fifty-fifty—Republic has acquired the interest of Cleveland Cliffs and Montreal Mining and half of the interest of Wheeling Steel. Armco has purchased the other half of the Wheeling Steel holding. This gives Republic and Armco each a 50 per cent interest in Reserve Mining.

Oglebay-Norton & Co., Cleveland, is continuing to manage the property for Reserve Mining Co.

Property under lease by Reserve Mining Co. includes about 17,000 acres; the ore body is approximately nine miles long. It is known to contain at least 1.5 billion tons of magnetic taconite that can be mined by the open pit method. When converted, it will amount to about 500 million tons of high-grade iron ore, enough to supply 10 million tons of ore annually for the next 50 years. Republic and Armco are presently consuming around 10 million tons of iron ore a year.

On Beaver Bay—In addition to the proved deposits, geological studies show the presence of substantial additional tonnages of taconite on the property. Reserve Mining Co. contemplates building a plant to process the taconite ore near Beaver Bay on the north shore of Lake Superior. First unit of the plant to be built as soon as plans can be completed will produce about 2.5 million tons of iron ore pellets annually and will represent an investment of more than $60 million.

To transport the taconite rock from the mines a 47-mile railroad will be constructed to Beaver Bay. To provide for loading facilities for lake ore carriers, a dock and harbor will be built. A breakwater for the harbor will connect with two offshore islands.

Expansion Expected—Longer range development plans provide for future expansion of the plant to provide an annual capacity of 10 million tons at an estimated additional cost of $100 million.

Lewis vs. Moses

IN THIS corner, the coal miners' champion and rugged battler, John L. Lewis. And in this corner, his worthy opponent, mine operators' Harry M. Moses.

This will be the feature attraction when the gong sounds for the next set-to between the mine operators and the United Mine Workers of America.

Mr. Moses last week resigned as president of the H. C. Frick Coke Co. and the United States Coal & Coke Co., U. S. Steel subsidiaries, to become president of the Bituminous Coal Operators' Association. He will have charge of the operators' dealing with the miners' union.

Commercial practicability of taconite ore has been demonstrated in trial production runs in a blast furnace of Armco Steel. Cost of pig iron produced from this material is said to compare favorably with the cost of iron made from natural ores of the same content.

Marriage of Know-How—Joining of Republic and Armco in the taconite project combines engineering know-how for the production of blast furnace feeds of iron bearing materials in two different forms. Republic is already receiving about 1 million tons of iron ore concentrate a year from its properties in the Adirondacks in northern New York state. Separated magnetically from gangue, the iron is prepared for the blast furnaces in the form of sinter. Armco has been experimenting several years with the pellet-type of furnace feed.

Entrance of Republic into a taconite venture further broadens that company's quest for ore supplies for the future. In addition to getting ore concentrate from New York state Republic is receiving ore from the Lake Superior region and Alabama and is financially interested in development of ore reserves in Liberia, Labrador and Mexico. Armco also has access to Lake Superior ores and is participating in development of Labrador ore reserves.

How They Keep Going

Steelmakers resort to unusual methods to get enough materials to support their big output

METALWORKING plants would find steel procurement even more difficult than it is if the iron and steel industry were not taking unusual steps to get raw materials.

Turning out steel at capacity and increasing that capacity still further, the steel industry is not only using raw materials faster than they can be produced or delivered by normal methods but is throwing its materials flow out of balance.

In an effort to get enough iron ore moved to iron and steel producing centers to assure uninterrupted production, some steel producers are transporting iron ore all-rail from Minnesota and Michigan on a favorable freight rate basis, and others are seeking similar rate structures so they too can utilize the all-rail method.

Railroaded Through — Since early July, United States Steel Corp. has shipped iron ore all-rail to Pittsburgh mills from the Mesabi range on a freight basis of $5.63 a gross ton. Rail shipments of iron ore recently were initiated from Champion, Mich., in the Marquette range on a previously published rate of $5.11; a lower rate is being sought.

Pittsburgh Steel Co. obtained a rate of $4.50 per gross ton an all-rail shipments for an expected 50,000 to 60,000 tons of iron ore from Ostrander, Minn., to make possible continued operation of one of the company's blast furnaces at Monessen, Pa., supplying basic iron to the trade. The company hopes such shipment of ore will enable it to operate the furnace through November.

Weirton Steel Co. is seeking approval of a rate that will make it favorable for it to move iron ore all-rail from Iron River, Mich.

Car Shortage May Hurt — Other companies are considering similar action, although a freight car shortage may be a handicap to all-rail shipments.

All-rail shipments of imported iron ore from the eastern seaboard to

Midwest mills have been relatively small thus far, but an upward trend is expected and may reach significant volume next year on the lower rail rate tariffs from Baltimore and Philadelphia (STEEL, Sept. 18, p. 80) to become effective Oct. 9.

Expansion of the country's steelmaking capacity is putting a squeeze on pig iron capacity and throwing them out of balance. To help overcome this imbalance, steel producers and foundries too are importing foreign iron. There are reports in the pig iron trade that one large company has purchased 100,000 tons of German pig iron to help fill the gap in the iron needs of its steel plants. With their own iron needs at a high level, additional steel producers have been forced to restrict merchant iron output.

Squeezed Out—When foreign iron was $40 a gross ton f.a.s. eastern seaboard it was feasible to buy it, but with the price now closer to $50, such shipments are prohibitive in most instances, some foundry interests say.

The lower freight rates proposed by eastern railroads for hauling imported pig iron from Baltimore to Pittsburgh and the Mahoning Valley appear likely to be held up pending further negotiation with shippers. The railroads' proposal was for a rate of $7.50 a gross ton to Pittsburgh and $9.20 to the Valley. Pittsburgh interests are hopeful of a still lower rate of around $6.50 from Baltimore.

One of the Troubles—Part of the imbalance in the domestic pig iron supply is said to stem from poor quality coal, and in some instances from iron ore that is not up to standard. There are assertions that blast furnace capacity ratings should be adjusted downward in line with present quality of raw materials.

Expansion of the nation's steelmaking capacity may necessitate further enlargement of coke producing facilities. As all available facilities are currently needed to meet coke requirements, it appears probable that expansion will have to take the form of entire new units instead of modernization of existing facilities, for modernization already has been resorted to in a great many cases.

The high steel production is fostering continuation of scrap imports.

Freight Car Speed-up Welcomed

Interstate Commerce Commission emergency orders, intended to speed up movement of freight cars, is a welcome development, for an increasing tonnage of finished steel items has accumulated on mill floors awaiting delivery. Some metalworking companies report their products too are piling up for want of cars.

One steel producer has over 20,000 tons of finished steel awaiting availability of gondolas, and a merchant foundry iron interest is ten days behind on shipments because of lack of cars.

Supply of gondolas is said to be 45,000 to 50,000 cars less than at the beginning of World War II; they are being scrapped at a rate faster than current construction. A very large percentage of available flat cars have been taken out of commercial service for movement of military equipment.

Not Lax on Tax

THINK you're taxed on too many things?

Look at what the municipal authorities of Wadhwan, a town in Saurashtra state, India, levied a tax on! Chairs, benches, and signboards used in hotels and shops.

Dispatches from Wadhwan don't indicate if there was nothing else that had not already been taxed or if the municipal authorities were trying to be original. If it is the latter, they are successful. Advices from from Bombay say Wadhwan is the first town in the country to impose taxes on chairs and benches used in business.

B-W Division To Build Fuel Pumps

Responding to the stepped-up military demands of the American aviation industry, Marvel-Schebler Carburetor Division of Borg-Warner Corp., Chicago, will produce fuel pumps for jet plane engines in the division's soon-to-be-opened plant at Decatur, Ill. Roy C. Ingersoll, B-W president, made the announcement. The expansion of Marvel-Schebler's manufacturing activities, previously confined to carburetor building, will be accompanied by a reorganization of the divisional executive staff. The company's name is to be changed from Carburetor Division to Marvel-Schebler Products Division.

The fuel pump manufacturing section will not be in operation before late winter. The division is busy transferring its operations from Flint, Mich., to the newly rehabilitated and expanded Decatur plant. Production at the plant is expected to be started Oct. 15. Entirely new machinery was bought for the fuel pump section and it will be moved into the new plant beginning three or four weeks from now.

Buys Follansbee Ohio Plant

Ohio River Steel Corp. expects steel will be poured at Toronto plant within 60 days

OHIO RIVER Steel Corp.—formed to buy, rehabilitate and modernize steel plants—has acquired the works at Toronto, O., formerly owned by Follansbee Steel Corp. Ohio River Steel was formed by a group headed by Samuel E. Magid, chairman of the Penn-Ohio Steel Corp., Birdsboro, Pa. The transaction was financed by Hill, Thompson & Co. Inc., New York investment bankers.

The former Follansbee holding was purchased for about $500,000 and includes that portion of the operating facilities owned by Kovalchick Industries Inc., Indiana, Pa. Steel is expected to be poured at the Toronto plant within 60 days. Facilities there include four 50-ton basic open hearths that will have a rated capacity of about 160,000 tons annually when reconditioned. The Toronto plant also has a 1000-ton hydraulic cogging press, an 8-inch bar mill rated at 125,000 tons of sheet bars annually and a 2-high, 48-inch cold cast mill.

Many Former Owners—Ohio River also is negotiating for one 3-high breakdown mill and two 2-high finishing mills rated at about 5000 tons monthly. They are at the plant site and owned by Volco Brass & Copper Co., Kenilworth, N. J. The units were previously owned by Steel Producers Inc., but never operated commercially. They were sold to Volco under auction by court order. The experimental 10-inch hot Sendzimir mill has been moved from the Toronto plant to the Warren, O., plant of Republic Steel Corp.

In addition to purchasing the hand-finishing mills, Ohio River also contemplates widening the bar mill and stepping up the size of the blooms off the cogging press for production of larger 10 to 12-inch standard sheet bars within the limitation of the motive power and strength of rolls on the bar mill.

Manganese Drilling Award

A contract for a minimum of $14,000 to Atkins-Walker Co., Duluth, Minn., for drilling into manganese bearing iron ore on the Cuyuna range was revealed by Paul Zinner, regional director of the U. S. Bureau of Mines at Minneapolis.

Thompson Merger Coming

Agreement reached provides for exchange of stock with Perfect Circle Corp.

AN AGREEMENT providing for the merger of Perfect Circle Corp., Hagerstown, Md., with Thompson Products Inc., Cleveland, by the exchange of Perfect Circle's assets for Thompson Products' stock was announced by Frederick Crawford, president of Thompson, and Ralph R. Teetor, president of Perfect Circle. The agreement is subject to the approval of Perfect Circle stockholders. It provides for an exchange of one share of Thompson stock for each 4½ shares of Perfect Circle stock.

Stockholders of the latter company, producer of piston rings, bearing adjusters and cylinder sleeve castings for the original equipment and automotive replacement field, will be asked to meet no later than the 23rd of next month, but no definite date has been set yet.

Perfect Circle operates plants in New Castle, Tipton and Richmond, Ind., and a wholly owned subsidiary, Perfect Circle Co. Ltd., in Toronto, Ont.

Inland's New Coke Ovens Going

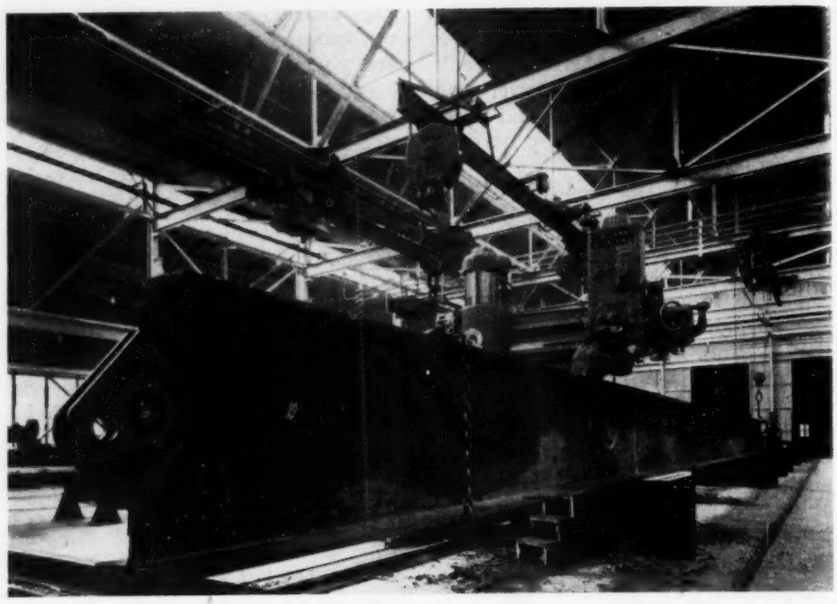
Inland Steel Co. put into operation its new battery of 65 coke ovens at its Indiana Harbor, Ind., plant. First charging of coal into the ovens meant that the company lifted its capacity to produce coke by 200 tons daily. Increased production of by-products including tar, toluol, benzol and naphtha will also result. The new battery of ovens will bake 980 tons of coke daily from over 1500 tons of coal. It will replace a coke-oven battery built in 1914 that is being taken out of production for future rebuilding. The plant will have 414 ovens in operation after withdrawal of the old battery.

$7.5 Million Plant in Canada

Frigidaire Products of Canada Ltd. bought an 86-acre industrial site near Toronto, Ont., where it will erect a new $7.5 million plant for the manufacture of electric appliances and commercial refrigeration equipment. The project is the largest of several that General Motors started in Canada.

Iron Ore for United Kingdom

Dominion Steel & Coal Corp., Hamilton, Ont., got an order for iron ore from the United Kingdom and initial shipments are about to be made. A contract for 200,000 tons was placed for ore that will go from Dominion's mine at Bell Island, Newfoundland.



THREE DECADES LATER: This wide flanged structural steel beam is part of the first major fabrication job to be undertaken at Bethlehem Pacific's new Seattle Fabricating Works. It will be used as one of the main girders for the Longview, Wash., highway bridge for which Bethlehem furnished about 15,000 tons of structural steel in 1929. Above the beam is a 5-ton Yale hoist, behind which is a Cincinnati Bickford radial drilling machine. On the left in the background is a 5-ton capacity Ederer crane

Penn Metal Does It Again

For the third time in three years Penn Metal Co. has let contracts for enlarging its plant at Parkersburg, W. Va. Plate Construction Co., Parkersburg, is to start immediate erection of additional units that will give Penn an additional 20,000 square feet of new floor space. The additions, of steel frame and concrete, will be used for warehousing of materials and finished products and to accommodate increased manufacturing facilities for the present lines of Pennmetal lath and expanded metal and new lines of metal lath accessories.

Aetna-Standard Will Move

Aetna-Standard Engineering Co. will move its Youngstown headquarters to Ellwood City, Pa., and Pittsburgh. Ernest E. Swartswelter, chairman and president, made the announcement. Top management and sales offices will go to Pittsburgh; all other business carried on in Youngstown will go to Ellwood City. Aetna-Standard has plants at Warren, O., and Ellwood City.

Aetna-Standard will get into rubber and plastics equipment manufacturing, Mr. Swartswelter says. The company is associated with Hale & Kullgren Inc., Akron, rubber and plastics machinery consultant. Equipment will be made at the Warren plant to H & K specifications.

Butler Gets Coston Property

Butler Mfg. Co., Kansas City, Mo, acquired the $1 million properties of W. L. Coston & Sons, Birmingham. Butler will double the capacity of the Alabama plant. The company, a manufacturer of fabricated steel buildings, welded tanks, bolted tanks, grain bins and numerous other steel products, just got a big order for steel landing mats from the Defense Department and will fabricate the mats in Birmingham.

Coston, organized in 1947, has manufactured welded and miscellaneous steel plate on its 40-acre property. It is highly likely that Butler will continue the same kind of work along with fabrication of its other products.

Helicopter Firm Flying High

Piasecki Helicopter Corp., Morton, Pa., is embarking on a building expansion program to cost about $500,000. The program and the leasing of additional facilities will boost the company's plant area to 220,000 square feet or about double the present plant area. That will make the plant about 175 per cent larger than it was a year ago.

The expansion is necessary because

of Piasecki's backlog of military orders amounting to $35 million. Several months ago the backlog was $15 million. Bulk of the aircraft builder's orders is from the Navy for tandem-rotored utility-rescue helicopters.

After Gaston, Gaston Inc.

Gaston Power Tools, Harvey, Ill., manufacturer of heavy duty grinders and polishers for the metalworking field, and producers of standby generators and concrete vibrators, was sold to new interests by Ralph M. Gaston. The firm is known as Gaston Power Tools Inc. now and will continue operations at Harvey, says Arthur O. Backen, president. He says sales and service facilities for the Gaston line have been enlarged and that wider distribution of Gaston products is being established.

Borden Starts Alabama Plant

Borden Metals Co., recent purchaser of a 20-acre site at Leeds, Ala., 17 miles from Birmingham, started work on its new plant. It will be built by Birmingham Steel Buildings Inc. Borden will manufacture steel gratings, stairways and all types of steel floors or gratings where strength, light and ventilation are required. The floors and gratings are mostly for ships, power plants and other industrial installations. The plant is expected to be completed in three months and will employ about 100 people at its start.

Sylvania Plant Under Way

A new plant that will specialize in production of plastic and plastic-metal components for the radio, television and lighting industries is being constructed for the Parts Division of Sylvania Electric Products Inc. at Warren, Pa. A. L. Chapman, general manager of the Parts Division and Radio & Television Division, made the announcement.

C. F. & I. Buys Land at Buffalo

Colorado Fuel & Iron Corp. purchased a 175-acre tract of undeveloped land adjoining its Wickwire Spencer Steel Division plant at Buffalo. The company, says Carl W. Meyers, president, has no definite plans for new plant expansion at present but the purchase will enable it to meet any needs of the future.

Other sources, however, say the company is working on plans for a substantial plant expansion at Buffalo, the imminence and nature of the expansion hinging on government steel requirements. The Buffalo plant has two blast furnaces, four open hearths and wire making facilities.

Equipment Buying Planned

Missouri-Kansas-Texas Railroad will buy more than $9.8 million worth of rolling stock and equipment in the next six months, R. J. Morfa, chairman, announces. Directors authorized purchase of three two-unit diesel passenger locomotives, 16-single-unit switching diesel engines, 500 fifty-ton all steel box cars and 300 seventy-ton all steel gondolas.

Crescent Industries Building

Crescent Industries Inc., Chicago, manufacturer of radio speakers, record changers and dictating equipment, is building a new plant that will cost from $875,000 to $900,000, exclusive of equipment. It will be a one-story structure with 137,000 square feet of floor space. The company hopes to move into its new quarters in about a month. The plant is being built of brick, glass and stone on a site 360 x 1340 feet.

Koppers Gets Coke Oven Contract

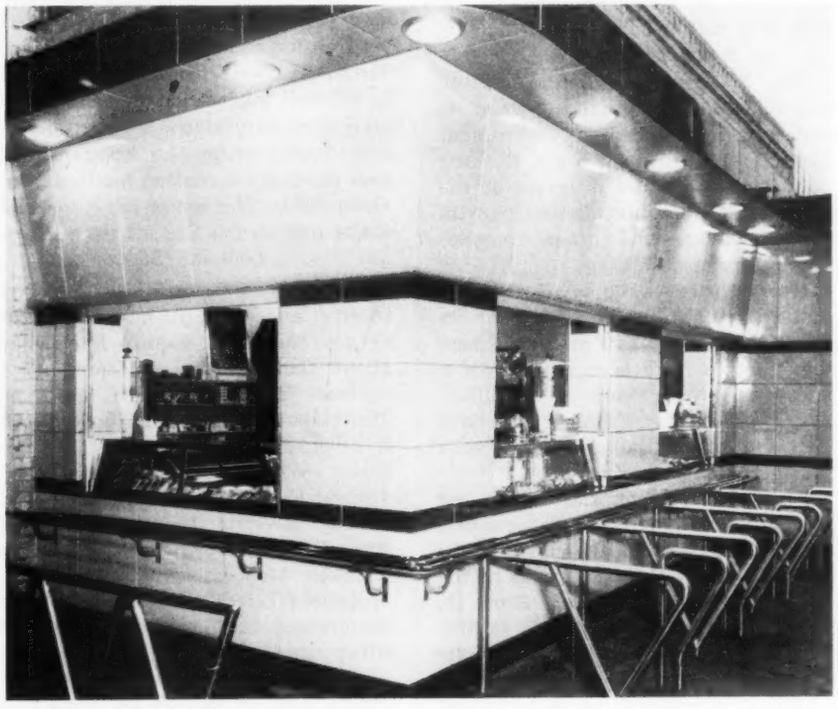
Alabama By-Products Corp., operator of a large foundry coke and coal-chemical plant at Tarrant, Ala., near Birmingham, awarded a contract to construct a battery of 29 new chemical-recovery coke ovens to Koppers Co. Inc., Pittsburgh. Joseph Becker, vice president of Koppers and its Engineering & Construction Division general manager, made the announcement.

Engineering work has started. The new battery is expected to be completed within a year. It will consist of 29 Koppers-Becker type ovens, underfired with coke oven gas. At 20 hours' coking time they will produce 150,000 tons of coke annually. Alabama By-Products now has 174 ovens and the new battery will bring its total to 203.

McCulloch Motors Speeds Along

A $2.5 million expansion program now under way at the Los Angeles plant of McCulloch Motors Corp. will increase the productive capacity of that manufacturer by 300 per cent. The firm is already one of the biggest builders of power chain saws.

The plant area, now 75,000 square feet, will be increased to 324,000 square feet by the addition of eight new manufacturing bays, a new recreation-cafeteria building and an additional engineering and warehousing facility. All of the eight new bays, comprising 150,000 square feet, will be for production. The increased facilities will triple the present magnesium and aluminum die-casting capacity, will add an entirely new heat-treating department and will expand the present gearmaking, machining and assembly output.



COMPACT CANTEEN: Located in a corner of National Tube Co.'s Lorain, O., pipe mill is this integrated canteen. Designed, erected and operated by Factory Stores, such canteen units occupy less than 1000 square feet. Iron and steel engineers attending the AISE meeting in Cleveland will inspect the canteen when they visit the Lorain works

Windows of Washington

By E. C. KREUTZBERG *Washington Editor, STEEL*

If you're worried about your future materials supplies you can learn a lot from what the materials handling equipment industry has done and is doing

IMMEDIATELY AFTER the National Production Authority was organized materials handling men scooted to Washington to learn how they could more effectively gear themselves to the military preparedness program. Their trade association, Material Handling Institute Inc., wanted the answer to a fundamental question: What should it do to assure a steady flow of short materials to the industry if allocations of steel and other materials became necessary?

Ebbing Reservoir — In industry throughout the country the dam that materials handling provides against the ebbing reservoir of available manpower is well realized. Few industries can work efficiently and economically without materials handling equipment. Mechanical and automatic materials handling equipment multiplies the output of workers whom it serves. In Washington, though, the story of materials handling has to be explained in detail. Government men are seldom in a position to judge the essentiality of particular industries, yet some of the same government men help make the decisions that affect the industries.

The Material Handling Institute appreciated the situation when it called on some informed government men for advice about what it must do to safeguard the interests of the industry if a paralyzing shortage in steel, castings and other components starts to develop.

Hurry-Up Job—The advice the government men gave was simple. In effect they said: You materials handling people have been saying for a long time that yours is a billion-dollar industry. Furnish the data that will replace the broad claim with indisputable facts.

The institute took the advice and started to make tracks. It organized a hurry-up statistical job to show how important the industry is to the country's economy (STEEL, Sept. 18, p. 80). It didn't stop there. It persuaded the Munitions Board to retain a live committee on materials handling equipment. And it decided to organize an industry advisory committee to represent the industry in conferences with the armed services, the Commerce and Interior departments, the National Production Authority and any other government agency that may require knowledge about the industry. Keeping such agencies informed is a full time job. Materials handling is not only big, it is diverse. MHI comprises 12 divisions: Wheels and Casters; Conveyors; Electric Accessories; Electric Hoists; Electric Industrial Trucks; Floor Trucks; Gas Trucks; Hand Lift Trucks; Monorails and Tramrails; Motorized Lift Trucks; Pallets, Containers and Auxiliary Equipment; and Strapping.

A Washington Impression—The institute also decided on an immediate intensified drive to bring into the membership all materials handling equipment companies not now enrolled. The move was taken on the recommendation of government officials who say the effectiveness of any trade association in dealing with the government increases with the percentage of its industry which the association actually represents.

Many industries are in the same shoes as the materials handling people were prior to their Washington meeting. Many of them know that they are vital to military preparedness, but they have not impressed Washington sufficiently with that fact. They should take action at once, under Department of Commerce guidance, to establish their essentiality. Those who fail to take such action may be adding unnecessarily to future troubles in obtaining materials and in other ways benefiting from an adequate understanding by the government.

IT'S BEEN A LONG TIME: For the first time in roofing history copper battens were installed in a copper batten roof. They're generally wood. The installation is on the Senate wing of the nation's Capitol building. The ingenuity that led to the unique application, says Revere Copper & Brass Inc., which fabricated the copper used on the roofing job, can be credited to the contractor on the job, Lloyd E. Mitchell Inc., Baltimore. The firm used a forming machine (foreground) that double-wraps the copper caps over the battens, making the final seal water-tight. The repair job is the first major one on the Capitol since it was built in 1850

Try This on Your Slide Rule

Question: By what numbers is the number 166,666,666,657 divisible? Answer: This number is not divisible by any number other than 1 and itself. That was one of many diverse problems solved by the Bureau of Standards Eastern Automatic Computer during a demonstration at the recent Conference on Automatic Computation at the Shoreham Hotel, Washington. The particular problem was answered by the electronic brain in 40 minutes; it would have taken three months for a man working eight hours a day with a desk calculator to get the answer.

SEAC (as the electronic computer is termed) was sponsored by the Air Force for use in planning efficient operating and mobilization schedules, for eliminating time-consuming paper work: How many parts of a certain type are on hand in the various locations? How many bolts and screws are needed? What delivery schedules must be maintained for satisfactory execution of a particular program? And so on.

Dr. Ralph J. Slutz, one of SEAC's main developers, believes that the machine ultimately will find wide use in industry—in such matters as controlling inventories, scheduling the flow of materials and so on.

New RFC Loans to Metalworking

New loans by Reconstruction Finance Corp. include two in the air-

craft industry—to Engineering & Research Corp., Hyattsville, Md., and Luscombe Airplane Corp., Dallas, Texas. Engineering & Research, which manufactures airplane parts and engages in airplane engineering and research work, borrowed $1.5 million for 18 months to improve its working capital position. Luscombe, a manufacturer of complete airplanes, borrowed $500,000 for a 62-month term for payment of debts.

U. S. Contract Bidders Listed

The procurement information service run by Fred Hollowell, former government information official, 3603 R St. N. W., Washington 7, has been expanded to include weekly lists of successful bidders on U. S. government contracts. The service is in addition to daily advance official information on what, when, and where the government is going to buy. The information thus presented is an exact reproduction of the material assembled by the Commerce Department, the difference being that Mr. Hollowell air mails the information to his subscribers and the government makes it available only at Commerce field offices, through chambers of commerce and other offices throughout the country.

A Little Fuzzy About Rules?

If you're an aircraft or aircraft accessories contractor or subcontractor who is a little fuzzy about the maze of regulations connected with Air Force procurement, here's a tip: Write to Col. R. T. Rampy, auditor general, United States Air Force, The Pentagon, Washington 25, and ask him to send you reprints of an article that he had published in *U. S. Air Service* this month.

It explains: The fundamental relationship between audits and reimbursements, negotiation of prices, statutory renegotiation, comptroller general's rulings and accounting requirements of the Internal Revenue Bureau as observed by the U. S. Air Force.

Dispersal Plans Pigeonholed

President Truman's request for an appropriation of $139.8 million to disperse key agencies of the government away from Washington so the capital city would be a less attractive bomb target is dead for this session of Congress. The money was to have been spent for the construction of eight new buildings at four unselected sites 20 to 30 miles from downtown Washington. The Senate Appropriations Committee pigeonholed the request on the basis that the national civil-defense program, of which the Washington dispersal plan is a part, had not been properly studied.

Any More Capacity Around?

If your area of the country has larger production capacity than is being utilized, get in touch with the Area Development Division, Commerce Department, Washington. Originally organized to help distressed communities solve their unemployment problems, the division is available to help the present production drive by pointing out prime contracting and subcontracting opportunities for getting idle capacity at work. The best approach to the division is through Chambers of Commerce, Boards of Trade and similar area business organizations.

Illustrating the improvement in employment, the Labor Department has dropped one-third of the depressed areas on its "E" list. Those dropped are Danielson, Conn., Lowell and Bedford, Mass., Sheboygan and Upper Peninsula iron area, Mich., Portsmouth, O., Johnstown, Pa., and Wailuku, T. H. Fourteen areas still are on the "E" list: Jasper, Ala., Crab Orchard and Mount Vernon, Ill., Clinton, Ind., Cumberland and Garrett county, Md., Lawrence, Mass., Pottsville, Scranton, and Wilkes Barre, Pa., Providence, R. I., Newport News and Hampton, Va., Martinsburg, W. Va., and Hilo, T. H.

Civilian Employment on Upswing

Federal employment of civilians is on the upswing again because of the Korean war. Net increase by the Army, Navy and Air Force in the first month of the war was 26,251, according to the Byrd Joint Committee on Reduction of Nonessential Federal Expenditures. The armed services' roster of civilian employees on Aug. 1 stood at 779,400 as compared with 753,149 a month previous. Employment by other government agencies dropped by 9512 names in the month, but gains are expected starting immediately to take care of new duties legislated by Congress. Many new names are expected on the government payroll, for one thing, to administer the Defense Production Act of 1950—the statute authorizing materials, price and wage and other controls. Total civilian employment by the government as of Aug. 1 stood at 1,985,139.

Miniature Metalworking Library

Complete sets of the Navy's "Industrial Notes" series, prepared by the Bureau of Ships for shops working on Department of Defense contracts, are available at $15 from the Office of Technical Services, Commerce Department, Washington 25. Comprising 60 different titles, the set tells how to perform many manufacturing operations. It is described as "a complete library in miniature for the metalworking plant."

Batt Serves Government Again

William L. Batt Sr., who served the government in many important capacities in the past, accepted an appointment as chief of the Economic Cooperation Administration's mission to the United Kingdom. He is on leave from his post of president, SKF Industries, Philadelphia ball bearing firm.

Beginning his government service in 1938, he was appointed to the Commerce Department's Business Advisory Council. In 1940 and 1941 he served the group as chairman. At the same time he was called on to fill key posts in national defense planning, ultimately becoming vice chairman of the War Production Board. Subsequently he was assistant to chairman, Civilian Production Administration, and later chairman of the Inter-Agency Policy Committee on Rubber.

He was a member of a mission to Moscow in 1941 and during the war was U. S. representative on the Combined United States-British-Canadian Raw Materials Board and the Combined Production & Resources Board.

Mr. Batt has served as president, American Society of Mechanical Engineers; chairman, American Management Association; and chairman, International Trade Organization.

War Makes an Out for Bergson

Though Herbert A. Bergson as long ago as late 1949 signified his intention of retiring from the Justice Department, his resignation as assistant attorney general in charge of the Antitrust Division, as of Sept. 30, was expedited by the entry of the U. S. into the Korean war, and the precipitation of the country into another military preparedness program.

In line with the custom of eliminating antitrust proceedings as far as possible in a period of emergency so as not to add to the difficulties of industrial management, the Antitrust Division is expected to have less work than usual for the present. Like his predecessors in the Antitrust Division, Mr. Bergson will engage in private law practice in Washington.

On Last Mile to Steel Nationalization

British Labor government appoints board to take over iron and steel industry and sets date for nationalization as next Jan. 1 or as soon thereafter as practicable

THE BRITISH iron and steel industry's days as private enterprise are numbered.

Through a quick move, the Labor government set up the board that will supervise the industry after it is nationalized and announced that the industry will be taken over by this board next Jan. 1 or as soon afterward as possible.

Bold efforts of the Conservatives and Liberals in the House of Commons to force a downfall of the Labor party in the hope of thwarting the nationalization failed last week when a motion to protest the action of the Laborites lost by six votes in the Commons.

The Labor government felt it had to go ahead with plans for the British steel nationalization, one of its pet projects. Furthermore, the last parliament had passed the Iron & Steel Act providing for the organization of the Iron & Steel Corp. of Great Britain, an agency to take over and operate the steel industry. To abandon outright and for good the project of nationalizing steel was politically impossible for Laborites.

Troubled Path—Not only did the Labor party run into opposition for nationalizing the steel industry at any time but it snagged into objections that proceeding with nationalization now would through political dissension and change of management disrupt national unity in rearmament and defense. It was in carrying out what it considered its obligation that the Labor government through the Minister of Supply announced Sept. 14 its intention to proceed with the nationalization.

The Iron & Steel Act provides that the Iron & Steel Corp. consist of a chairman and not less than six nor more than ten other members, none of whom were to be appointed before Oct. 1, 1950, by the Minister of Supply. In announcing appointments of a chairman and six other members, Minister of Supply Strauss said the appointments were to be effective Oct. 2, 1950.

Not a Steel Maker—Appointed chairman was S. J. L. Hardie, chairman of the British Oxygen Co. Ltd., vice chairman of Metal Industries Ltd. and director of other firms.

Named deputy chairman was Sir John Green, director of Thomas Firth and John Brown Ltd. and chairman of the central conference of the Engineering and Allied Employers' National Federation.

Full-time members named to the Iron & Steel Corp. were: Sir Vaughan Berry, British delegate to the International Authority for the Ruhr; Gen. Sir James Steele, adjutant-general to the Forces; and W. H. Stokes, an official of the Amalgamated Engineering Union and chairman of the Midland Regional Board for Industry.

Named as part-time members were J. W. Garton, chairman of Brown Bayley's Steel Works Ltd. and managing director of the Hoffmann Mfg. Co. Ltd.; and R. A. Maclean, chairman of A. F. Stoddard & Co. Ltd. and director of Scottish Industrial Estates and a number of other firms.

Tough Job—Procurement of properly fitted men to head up the Iron & Steel Corp. proved to be a headache for the Labor government. The nationalization act stipulates that appointees to the corporation be chosen from "persons who have wide experience of, and shown capacity in the production of iron ore or iron or steel, industrial, commercial or financial matters, administration or the organization of workers."

It was pointed out in the British press that the Minister of Supply not only was unable to obtain the services of distinguished steelmakers but was unable to recruit trade union representatives with practical experience in the industry.

Who Is Hit—Under the nationalization all concerns making over 20,000 tons of crude steel annually and their integrated mills, forges, foundries and other departments will be state-owned. Remaining independent but with the state as a competitor will be a large percentage of nonintegrated mills and processing works representing around 45 per cent of total gross value of output.

Rearmament Spurs Ordering

Rearmament has given additional impetus to the British steel market. Orders for a big tonnage have been placed in the last few weeks, with a result that some products are not likely to be delivered before the second quarter of next year. Some of the business now offered is believed, however, to be speculative.

Prices on some British rolled products have increased but it is thought unlikely the government will relax its

BIGGEST IMPRESSION: When asked what impressed them most after a visit to Hanson-Van Winkle-Munning Co., Matawan, N. J., a team of British specialists said they were amazed at the amount of free service given by American industry to their customers in the laboratory and in the field. The 13-man team from the British metal finishing industry visited H-VW-M where they saw a completely modern plating installation, up-to-date facilities for analysis and control of electroplating solutions and advanced equipment for research in the electroplating part of the metal finishing industry. P. R. Lyons (center), manager of H-VW-M electrical sales, shows them the equaload brush and insulated brush holder features of a low-voltage generator

policy of price restraint even though production costs are still rising.

British Steel Exports Rise

British steel export business continues to increase, but this trade may suffer because of necessity to divert steel to armament at home.

Every month this year exports of iron and steel have increased, bringing the total for January through July to 1,729,101 tons this year, compared with 1,376,489 tons in the corresponding period of last year.

Biggest buyers of British steel are colonies of the British Empire. Australia and New Zealand together took 309,088 tons in the first seven months of this year, compared with 145,475 tons in the corresponding period of 1949.

While Imports Fall

Imports of steel by Britain have fallen off strikingly this year. Its purchases in the first seven months were slightly less than 500,000 tons, against nearly 850,000 tons in the like period of 1949.

The shrinkage results from the fact that buying of pig iron and semifinished steel has been practically halved this year. Users of semifinished are not consuming less but they are buying the material in the home market.

Ingot capacity is rising and next month will be increased 175,000 tons annually when a new plant in Scotland will be started.

Steel Output Expected To Rise

Since vacations are over, British steel output is expected to return to the rate set as the year's target, 15,750,000 to 16 million tons.

Steel production in August showed the drop usually associated with a vacation month, the annual rate being 14,530,000 tons. Annual rate of production for the first eight months of this year was 16,063,000 tons.

Pig iron output in August was also lower, being at an annual rate of 9,205,000 tons, compared with 9,477,000 tons a year ago.

Metalworking Production Up

Production in the British metalworking industries is up.

Automobile industries are working to capacity, the bulk of their output being for export.

Output of agricultural tractors reached a record of 11,300 in June. Of these, 8000 were for export.

Power plant producers have work which will keep them busy several years. Railroad freight car and locomotive builders are working at capacity on export orders, and shipbuilders are experiencing a sharp increase in inquiries. Engineering foundries are fully booked, but foundries making light castings need more work.

NEVER TOO OLD: At 64, Henry Ostien, is proving to fellow Westinghouse employees that "you're never too old to learn." For figuring out an improvement in the method of machining the 12,000-pound thrust bearings that support big water-wheel generators Mr. Ostien just received a $500 check. He was one of 3183 employees who earned $66,073 in addition to their regular pay in the first six months of 1950 for figuring out new and better ways to do their jobs. He's a 49-year veteran with Westinghouse's East Pittsburgh plant

French Short of Export Steel

Steel sheets and plates are difficult to get from France, for French industries are consuming most of the output. French automobile manufacturers, for instance, are requiring heavy tonnages of sheets.

Also short on the export market is tin plate, although French production of this product is increasing.

Toolmakers to Talk Mobilization

Representatives of all branches of the machine tool industry will meet at the Royal York Hotel in Toronto, Canada, on Oct. 10. Purpose of the meeting will be to review mobilization plans of the machine tool industry in the light of developments in Korea and elsewhere.

Chairman of the group is Herbert L. Tigges, vice president of Baker Bros., Toledo, and president of the American Society of Tool Engineers. The tentative agenda of the meeting will include talks by Mr. Tigges; a representative of the National Security Resources Board; David Ayr, president, National Machine Tool Builders' Association; and others.

Besides the ASTE and the NMTBA, these associations are also active in the group: National Machine Tool Distributors Association, Machinery Dealers National Association, National Tool & Die Manufacturers Association. The group plans to hold one or more meetings a year regardless of foreign developments.

Sweating Out Safety Record

By mid-September a whole month had gone by since any one of the 26,000 employees of U. S. Steel's National Tube Co., Pittsburgh, was away from his job because of an accident —a feat without parallel in the company's history as one of the nation's safety leaders. Last week National Tube officials were hoping the Ellwood, Pa., plant would keep its spectacular record going and pass the 4 million man-hour mark without an accident.

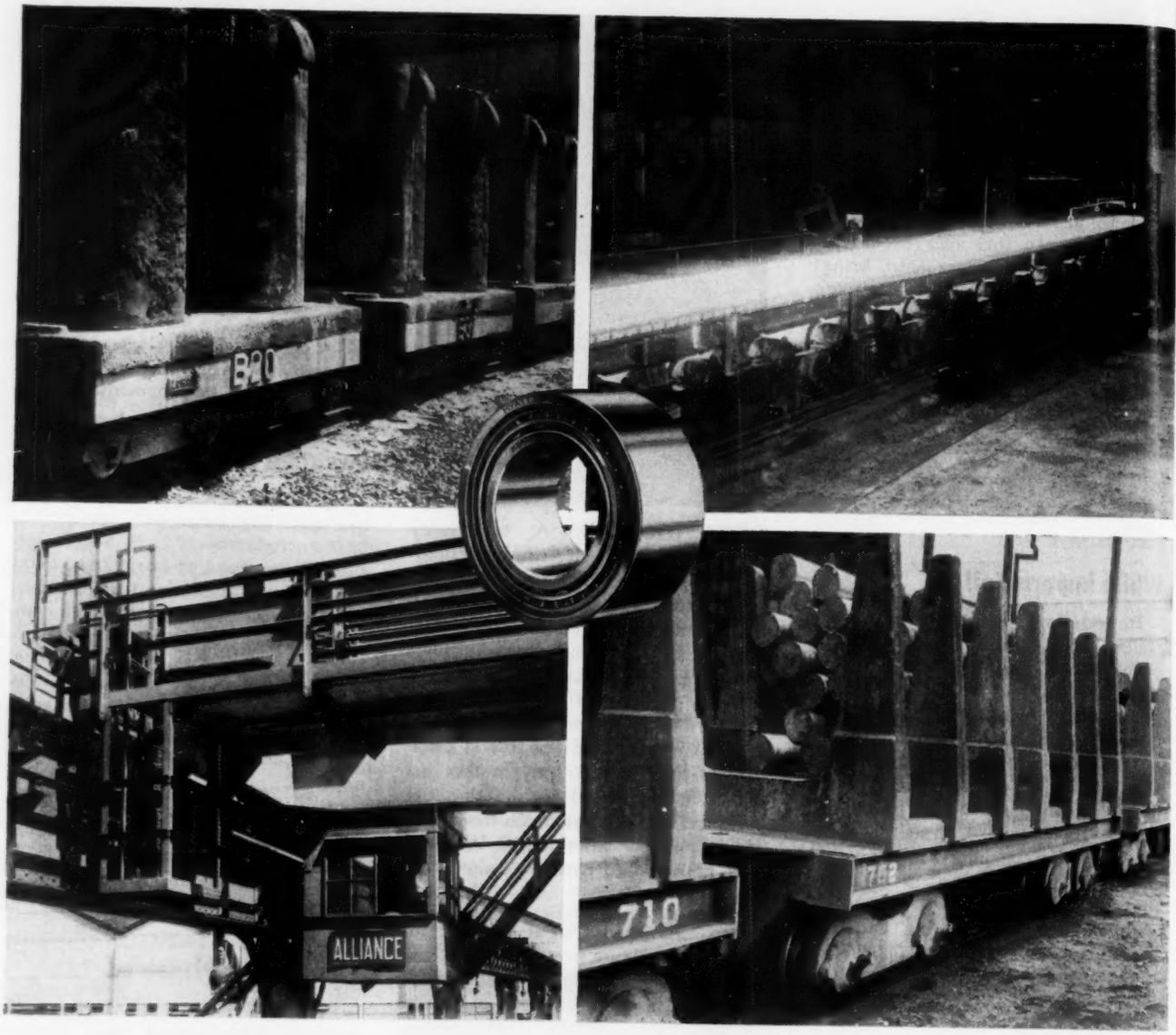
Not a single employee in any of the company's five plants sustained a lost-time accident since Aug. 12 when a workman received a shoulder injury.

Pioneer Firm Pioneered

Founded in 1902 by Col. Henry M. Byllesby who worked with Thomas A. Edison and George Westinghouse, Pioneer Service & Engineering Co., Chicago, is looking toward its 50th anniversary. The engineering, management and service firm—it engineered and designed the application of the first gas turbine to an electric utility system—prepared a 16-page booklet that traces its history and describes its present activities.

Having a Sales Training Meeting?

Have you ever wondered how you could make a sales training meeting more effective? An 84-page booklet just published by the Sales Personnel Division of U. S. Steel Corp. can tell you how. Details from the moment a decision is made to hold a meeting until the last trainee heads for home are listed in the booklet, "Suggestions for Sales Training Meetings." A limited number of copies are available without cost. Write to Sales Personnel Division, United States Steel Corp. of Delaware, 436 Seventh Ave., Pittsburgh 30.



Easing the loads at Lorain

One of the reasons why the Lorain Works of National Tube is such a smooth running steel mill is its wise and generous use of Hyatt Roller Bearings.

The table rollers are Hyatt-equipped and the ingot, charging and transfer cars too. Likewise do the cranes and mill motors operate more smoothly with similarly dependable Hyatts.

Like most other steel mills, Lorain has proved by experience that Hyatts take the heavy loads with less bearing wear and care. Whether it is in the design of new equipment or in change-overs, Hyatts are the bearings preferred by most steel mills. Hyatt Bearings Division, General Motors Corporation, Harrison, N. J., Chicago, Detroit, Pittsburgh and Oakland, Calif.

HYATT ROLLER BEARINGS

By A. H. ALLEN *Detroit Editor, STEEL*

Mirrors of Motordom

Grille and rear fenders most obvious changes in new Nash models. Mechanical improvements include waterproofed ignition, redesigned carburetors, easier steering

DETROIT

TO CATCH the identity of a Nash for 1951, it will be well to concentrate on the grille in front or the rear fenders; they are about the only readily distinguishable features which have undergone much change from the 1950 series, although numerous mechanical refinements have been incorporated in engines and chassis of the Ambassador and Statesman models.

The grille on both models, a one-piece zinc die casting, features vertical convex-contour bars, in place of the predominantly horizontal bars used in 1949 and 1950 grilles. The bars are spaced far enough apart to permit easy cleaning and to provide adequate air flow. An enclosing rim, retaining the former oval shape, has a convex cross section instead of the previous concave design. Rear fenders are restyled wtih a ridge extending from the edge of the rear door to the light assembly mounted at the fender "tail." Top of the fenders, now substantially horizontal, gives a decided different rear end appearance. To harmonize with it, the light assembly is mounted in the fender rather than in the trunk lid. Recess in the left rear fender for the gas tank filler pipe has been revised to reduce the tendency for dirt to collect inside. The depression at the bottom is shallower, thereby improving drainage characteristics, should the corner drain holes become plugged.

Headlights are surrounded by a distinctive chrome-plated ring, serving to accentuate the light and also acting as a guard for the relatively fragile glass lens. Restyled bumper guards have massive bullet-shaped tops to accentuate the overall streamlining. Extending outward from the bumper guards on all four corners of the Ambassador models are plated fender guards which distinguish the higher-priced models and protect sheet metal as well.

Uniscope Abandoned — Nash has given up its "uniscope," which was a bullet-shaped housing containing all instruments and being mounted on the steering column. Instruments now have gone back to the panel below the windshield, with a suitable shroud over the speedometer to prevent light reflection. Radio speaker outlet is at the extreme right of the panel.

Mechanically the 1951s offer such improvements as better waterproofing of ignition systems, neoprene-insulated high-tension wiring and caps over spark plugs, redesigned carburetors which should stay cleaner, and have fewer moving parts, a new type of starter which stays in engagement on intermittent firing during cold starts, changes in overhead valve mechanisms in the interest of greater valve durability, improved lubrication and quietness, better crankcase ventilation, and steering gear ratio boosted from 18.2:1 to 20:1 for easier manipulation in parking.

More Cooling Fins—In the smaller Statesman (at one time called the 600), the radiator core is 2 inches narrower and has ten cooling fins per inch instead of eight, thus permitting the fan to cover more effectively the width of the core. Also on this model Hydra-Matic transmission now is optional and a few changes were necessary in the transmission to adapt it to the different power characteristics of the smaller engine.

Changed valving has been adopted on the compression side of direct-acting shock absorbers on all series. Known as the no-orifice type of valving, it is less affected by changes in air temperature. Instead of using conventional fixed bleed orifices, the multiple disks making up the valve are arranged in a two-stage system. In light pressures, the first stage disks unseat, while on faster shock absorber movement the second stage disks deflect and provide a larger opening for the oil. Net result is calculated to be an improvement in riding characteristics and a firmer feel of the car on the road.

CONCENTRATE ON GRILLE AND REAR FENDERS

. . . one-piece zinc die cast grille, horizontal-appearing fenders

In making engineering changes, Nash follows the somewhat unusual policy of instituting some of them on the tail end of the previous model run, as a means of thoroughly proving their soundness. For example, the previously mentioned delayed-action starter was used for a few months production of 1950 models.

Lesson on Pricing

Pricing of 1951 models is proving to be a ticklish matter. Labor costs are sharply higher throughout the

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automotive industry, and parts suppliers are finding they must go along if walkouts are to be avoided. Thus, purchased parts will cost more. Nonferrous metals all have increased. Rubber has leaped up in price. A wage increase in steel, now in the threatening stage, could jack steel prices up another notch. Yet auto executives have gone on record as saying they will try to absorb higher costs in the hope they are largely temporary. To most observers the increases now look to be permanent and the inevitable forerunner of higher automobile prices.

However, it may not be necessary to raise the base prices of cars. There may be techniques possible which could take the "sting" out of price changes as far as the public is concerned, and still permit manufacturers to realize higher income. One such is in connection with standard and deluxe models. Right now there is probably a $75-$100 spread between the two types of models and most buyers seem to want the deluxe versions.

Now, if the price spread between the two were increased to, say, $125, and the standard models made even more "standard" by elimination of certain trim details, accessories and appointments, the impact of a price increase would be softened and the net result would be a higher take by manufacturers to offset their soaring costs. Even more buyers would want the deluxe styling and would necessarily pay the higher premium, while the price of standard models would be unchanged from 1950.

Plating Thinner — Shortage of nickel for plating has taken the expected turn for the worse. Platers say they will be lucky to receive this month allocations of 50 per cent of their average consumption for the first four months of the year, and they see no easing of the situation for October. Some relief has been obtained by reducing minimum plating thicknesses on certain parts where specific application has been made to the manufacturer for such relief. Reductions in total plate thickness, nickel and copper, of from 0.0005 to 0.00025 have been allowed here and there.

Meanwhile Fisher Body engineering standards department is circularizing suppliers with questionnaires seeking exact information as to the amounts of nickel in alloys and in plating on a wide variety of parts. This will mean a mountain of paper work for vendors who do not exactly relish the prospect. Whether it will solve the nickel shortage is dubious, but it is typical of the close look which all users of the metal are taking currently.

Henry J. in Production

Despite waggish predictions, "swing and sway with the Henry J." will not be the theme song of Kaiser-Frazer's nominee for the low-priced passenger car field, about which a barrage of advertising and publicity will be laid down starting this Friday. The smaller-size now is in production at a rate of 300 a day and dealers have been well sampled prior to formal announcement. Actually the Henry J. theme officially will be "the most important new car in America —smart—tough—thrifty." To this some of the lads who profess to know are adding "and all for thirteen-fifty," since they believe the price tag will be in the area of $1350.

At one time Mr. Kaiser hoped to sell his newest protege for $1000, but things have changed costwise since he started hoping and it has been necessary to inch up original price figures. In any event the car will sell for less than Ford-Chevrolet-Plymouth, although it appears doubtful if the new Henry J. will equal these three in terms of size, styling or power. Substantial increases in costs of labor, materials and component parts since the introduction of other K-F models on May 9 have forced the company to boost prices on these lines up to 6 per cent, effective last Monday.

Auto, Truck Output

U. S. and Canada

	1950	1949
January	609,882	445,092
February	505,593	443,734
March	610,678	543,711
April	585,705	569,728
May	721,161	508,101
June	897,864	523,689
Six Months	3,941,883	3,034,055
July	746,771	604,351
August	840,000*	678,092
September		657,073
October		601,021
November		474,731
December		384,318
Total		6,533,641

Weekly Estimates

Week Ended	1950	1949
Sept. 2	188,072	146,039
Sept. 9	151,606	123,806
Sept. 16	187,239	159,493
Sept. 23	185,000	158,518

Estimates by Ward's Automotive Reports

* Preliminary.

Ford To Build P&W Engines

Ford confirmed last week the imminent signing of a contract to build the Pratt & Whitney 28-cylinder model 4360 radial aircraft engine, used to power the Consolidated B-36 bomber, the Boeing B-50 bomber and C-97 Stratocruiser, the Douglas C-74 and C-124 Cargo ships, the Martin AM-1 Mauler and P-4-M Mercator, and the Fairchild C-119. Production will be centered at the Ford aircraft engine plant at 7401 South Cicero, Chicago, formerly the Dodge Chicago division which built Wright engines in the last war. It was this plant that housed the ill-fated Tucker enterprise.

Ford was licensed to build smaller P&W engines during World War II and completed 57,851 of the 200 horsepower double-Wasp units before hostilities ended.

The industrial mobilization planning for construction of the present engine began late in 1948 and has continued steadily, much of the preliminary work being finished. It is the initial step in a broad licensor-licensee program fostered by the industrial planning division of the Air Materiel Command, under which Pratt & Whitney will provide technical and manufacturing data as well as technical assistance in preliminaries to production. Similar agreements cover every critical aircraft component—air frames, power plants, propellers and other parts.

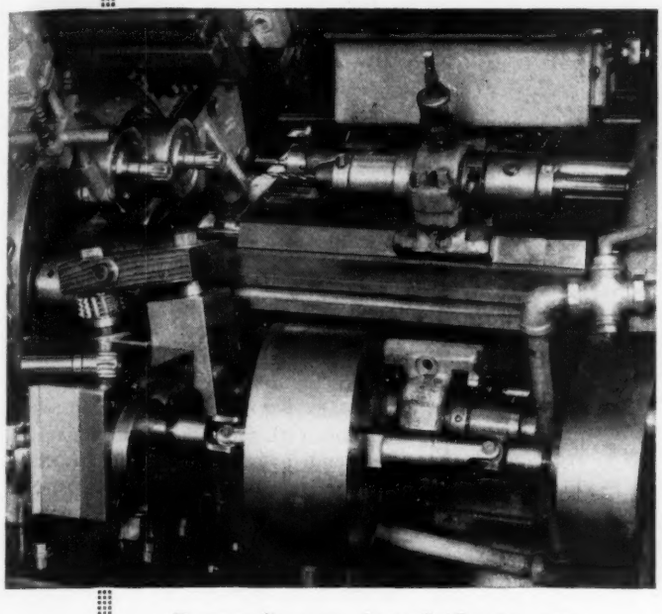
Chrysler Equips for V-8

Trade sources hint that Chrysler has moved ahead its V-8 engine program for the Dodge and De Soto Divisions, giving machinery builders the go-ahead so that orders will be on the books in the event of a government freeze on new equipment programs. The De Soto engine will be built at the division's recently completed Warren avenue plant, which also assembles passenger car bodies.

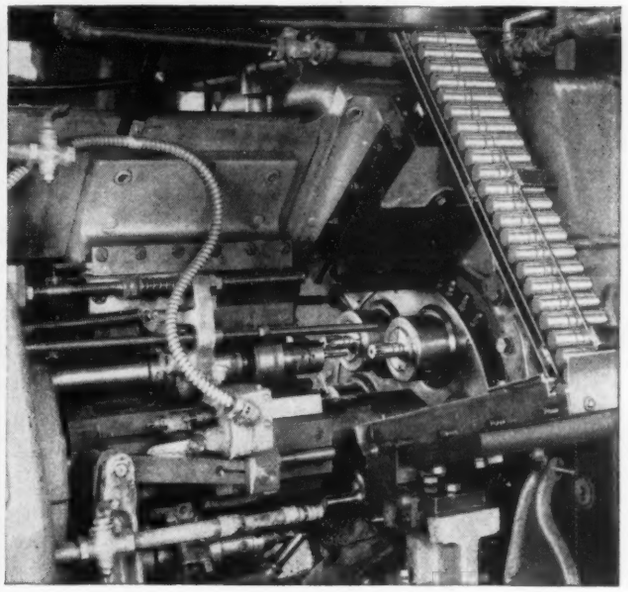
The Dodge unit apparently will be centered in the large addition being made to Chrysler's Nine-Mile road press plant. Major expansion in production of new automatic transmissions also is a Chrysler prospect. At Indianapolis a new plant will be built to handle part of the work, while additional production will likely come from the Dodge main division in Detroit.

The design is reportedly different from present types of torque converter transmissions, and may be available eventually on Chrysler, Dodge, De Soto and Plymouth.

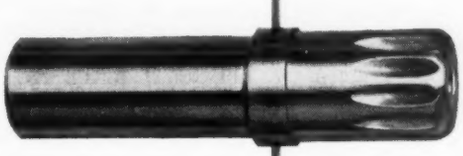
HOW TO SAVE ON SECOND OPERATION JOBS



Front tooling zone, Acme-Gridley bar automatic with special hobbing attachment for machining ratchet shafts.



Rear tooling zone, Acme-Gridley bar automatic with special magazine loader used in machining ratchet shafts.



JOB FACTS

Part—Ratchet Shaft $^{15}/_{16}$" diameter x $3^{3}/_{8}$" long
Material—SAE 1112
Operations—6, including hob 12 serrations
Machine—Acme-Gridley $1^{1}/_{4}$" RA-6 spindle bar automatic with magazine loading
Machining Time—10.7 seconds per piece

Second operations can sop up a lot of production dollars—unless you handle them right.

The *right* way—the timesaving, money-saving way, is to put them on an Acme-Gridley. Its greater versatility permits the liberal use of independent, power-driven auxiliaries—that combine operations, reduce handling, and cut machine overhead.

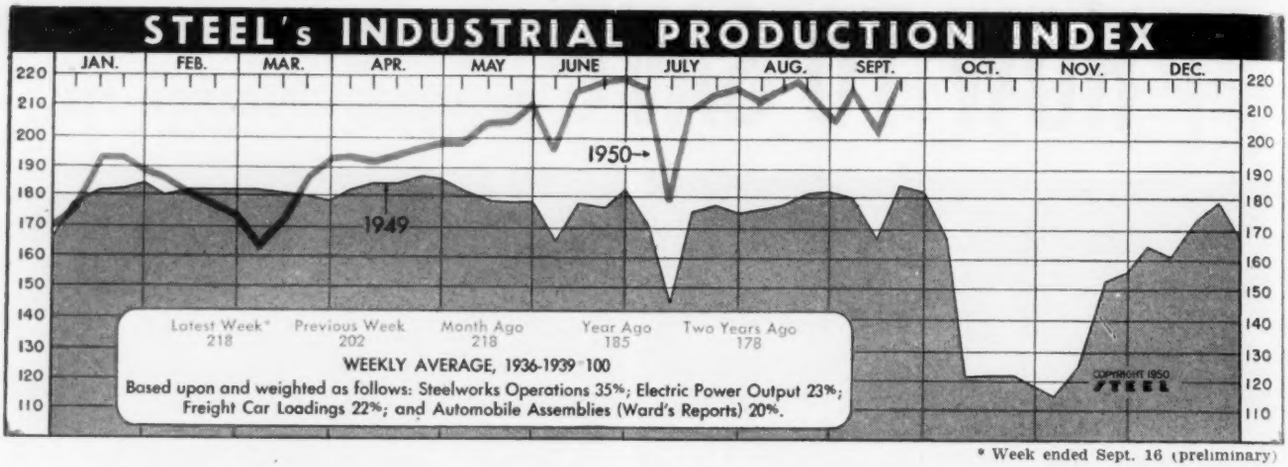
Take the ratchet shaft job illustrated, for example. Instead of transferring the part to a hobbing machine after the second operation drilling and tapping has been performed, the twelve serrations are machined by a hobbing attachment. Result: one less machine, one less unloading and reloading operation. And magazine loading cuts man-hours and production time still farther.

Wide, open tooling zones, close-coupled camming, rigid construction and plenty of power pay off in more good pieces in the pan every time. These are the practical, dollar-saving kinds of results you can expect from every Acme-Gridley. May we give you more facts, stated specifically in terms of your own needs? No obligation, of course.

The NATIONAL ACME CO.

170 EAST 131st. STREET • CLEVELAND 8, OHIO

Acme-Gridley 4-6 and 8 Spindle Bar and Chucking Automatics • Single Spindle Automatics • Thread Rolling Machines Automatic Threading Dies and Taps • The Chronolog • Limit, Motor Starter and Control Station Switches • Counters • Solenoids Centrifuges • Contract Manufacturing


STEEL's INDUSTRIAL PRODUCTION INDEX
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
220 210 200 190 180 170 160 150 140 130 120 110
1950→
1949
Latest Week* 218
Previous Week 202
Month Ago 218
Year Ago 185
Two Years Ago 178
WEEKLY AVERAGE, 1936-1939=100
Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.
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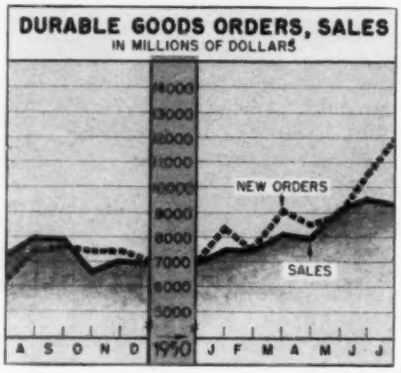
* Week ended Sept. 16 (preliminary)



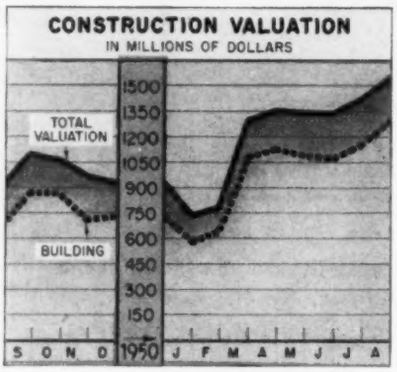
Charts—Copyright 1950, STEEL

Durable Goods Orders, Sales

In Millions of Dollars

	New Orders		Sales*	
	1950	1949	1950	1949
Jan.	8,377	6,706	7,471	7,550
Feb.	7,513	6,734	7,461	7,757
Mar.	9,075	7,185	8,127	7,805
Apr.	8,531	6,127	7,956	7,445
May	8,909	5,993	9,089	7,488
June	10,510	6,544	9,569	7,745
July	11,953	6,195	9,315	7,207
Aug.	....	....	7,407	7,982
Sept.	....	....	7,634	7,877
Oct.	....	....	7,432	6,542
Nov.	....	....	7,402	7,041
Dec.	....	....	7,019	6,960

* Seasonally adjusted. U. S. Office of Business Economics

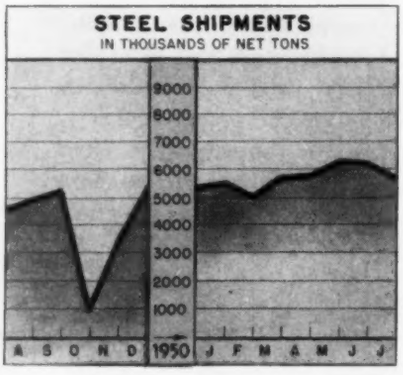


Construction Valuation

(37 States)—In Millions of Dollars

	Total		Building	
	1950	1949	1950	1949
Jan.	730.9	483.0	578.8	381.0
Feb.	779.5	568.5	627.0	415.0
Mar.	1,300.2	747.6	1,075.3	579.2
Apr.	1,350.5	842.6	1,123.5	620.2
May	1,347.6	880.3	1,083.0	666.9
June	1,345.5	945.7	1,072.0	706.7
July	1,420.2	943.6	1,162.2	690.9
Aug.	1,548.9	905.7	1,295.1	671.5
Sept.	....	1,093.7	....	870.6
Oct.	....	1,061.8	....	857.8
Nov.	....	957.8	....	701.3
Dec.	....	929.0	....	722.2
Total	....	10,359.3	....	7,883.3

F. W. Dodge Corp.



Steel Shipments

Net Tons

	1950	1949	1948
Jan.	5,482,691	5,788,632	5,410,438
Feb.	5,134,780	5,519,938	5,046,115
Mar.	5,723,340	6,305,681	5,978,551
Apr.	5,780,453	5,596,786	5,096,161
May	6,252,672	5,234,862	5,321,375
June	6,192,438	5,177,259	5,476,774
July	5,668,898	4,534,855	5,229,880
Aug.	.....	4,918,314	5,329,060
Sept.	.....	5,236,196	5,511,474
Oct.	.....	935,037	5,952,008
Nov.	.....	3,296,809	5,732,256
Dec.	.....	5,410,902	6,056,282

American Iron & Steel Institute

Issue Dates of Other FACTS and FIGURES Published by STEEL:

Employ., Metalwkg. Sept.18	Gray Iron Sept.4	Ranges, Gas Sept.4
Employ., Steel.....Sept.18	Indus. Prod. Sept.11	Steel Castings Aug.21
Fab. Struc. Steel...Sept.4	Machine Tools Aug.28	Steel Forgings Aug.7
Foundry Equip. ...Sept.11	Malleable Cast. Aug.28	Trucks, Elec. Ind..Jan.2
Freight Cars Sept.18	Price Indexes Sept.4	Vacuum Cleaners ..Sept.4
Furnaces, Indus. ..Sept.18	Pump Orders Sept.11	Wages, Metalwkg. .Sept.18
Furnaces, W. Air..Sept.18	Purchasing Power..Sept.4	Washers Sept.11
Gear Sales Sept.11	Radio, TV Aug.14	Water Heaters Sept.11

Index Rebounds Sharply

Gains in all four components that make up STEEL's industrial production index pushed the index for the week ended Sept. 16 to a preliminary 218 per cent of the 1936-1939 average. The latest index is 16 points higher than one week earlier and only 1 point below the alltime high recorded in June.

Construction Awards Go Up

Construction contract awards in the 37 states east of the Rockies shattered the month-old alltime record in August. The August total was $1548.9 million, $128 million or 9 per cent higher than the July total of $1420.2 million.

The latest total is 71 per cent higher than that for August, 1949. Total for the first eight months is $9823.2 million and is 56 per cent higher than in the comparable period a year ago. Floor area added this year reaches almost 895 million square feet and is up 72 per cent over the comparable total in 1949.

Residential awards in August totaled $754 million, a 12 per cent increase over the July figure and 92 per cent above the August, 1949, total. Nonresidential awards in August totaled almost $541 million and were 11 per cent above July and 95 per cent ahead of August a year ago.

Public and private works and utilities totaled $253.8 million, a decrease of 2 per cent from July but an increase of 8 per cent over August, 1949.

Awards for the last six consecutive months have topped the billion dollar per month mark by sizable margins. The total for the entire year should be far above that for any other year on record even if there should be a falling off in contract volume late in the year. There is some indication that the residential building boom may lose some of its momentum.

The Business Trend

Projected increase in the size of the armed forces is the tip-off that metalworking companies will have to hustle if they intend to turn out civilian goods

METALWORKING companies are engaged in a race against time. Their goal is to get in as much civilian production as possible before rearmament puts a big bite into production. Although military orders haven't yet become a big factor in total output, our military commitments are growing daily and it is the metalworking and metalproducing companies who will have to bear a large part of the rearmament load.

Both the producers of finished goods and their suppliers are straining to get the last ounce of production out of their plants. It isn't surprising that tempers have flared whenever one side or the other feels it is getting the short end of the deal.

Rising prices and labor demands for higher wages before a possible wage freeze only add to the pressure on management. These are days when ingenuity in overcoming shortages and the ability to locate alternate sources of supply are extremely valuable traits for production executives.

Steelmaking at Capacity . . .

Last week the steel industry maintained operations at capacity levels. In the week ended Sept. 16 the steelmaking rate was 101 per cent. There is a strong possibility that there will be a number of wildcat walkouts throughout the industry in weeks to come as the union makes its demands for a wage boost.

Assembly Rate High . . .

Daily assembly rates in automotive plants reflect near-capacity outturn for the industry. Weekly totals fail to match those recorded around midyear because tight metals supplies have eliminated almost all Saturday operations. Steel, copper and rubber are extremely tight. There is a possibility copper may join rubber on the allocated list. Auto builders are not too much worried about the effect of tighter credit on new car buying. They believe most new car buyers will have little trouble complying with Regulation W as most new car sales in recent months fell well within the limits set by the Federal Reserve Board. In the week ended Sept. 16 passenger car and truck assemblies bounced back to 187,239 units from 151,606 a week earlier.

Prices Still Rising . . .

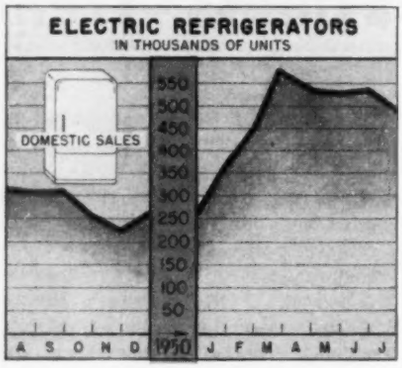
Although the original buying orgy has run its course, prices continue to move upward. The Bureau of Labor Statistics wholesale price index advanced 0.7 per cent in the week ended Sept. 12 to 168.9 per cent of the 1926 average. It is 2.4 per cent above four weeks ago and 9.2 per cet above the comparable week in 1949. The metals and metal products index moved up to 175.6.

Engineering Awards Ease . . .

Although engineering contract awards eased in the week ended Sept. 14 they were 41 per cent higher than in the like week a year ago. The latest week's $219.7 million

BAROMETERS of BUSINESS

		LATEST PERIOD*	PRIOR WEEK	MONTH AGO	YEAR AGO
INDUSTRY	Steel Ingot Output (per cent of capacity)†	101.0	98.5	100.0	86.5
	Electric Power Distributed (million kilowatt hours)	6,449	6,029	6,370	5,579
	Bituminous Coal Production (daily av.—1000 tons)	1,670	1,837	1,850	1,026
	Petroleum Production (daily av.—1000 bbl)	5,938	5,908	5,674	4,901
	Construction Volume (ENR—Unit $1,000,000)	$219.7	$256.1	$250.1	$156.0
	Automobile and Truck Output (Ward's—number units)	187,239	151,606	190,879	159,493
	*Dates on request. †1950 weekly capacity is 1,926,803 net tons. 1949 weekly capacity was 1,843,516 net tons.				
TRADE	Freight Car Loadings (unit—1000 cars)	845†	751	851	743
	Business Failures (Dun & Bradstreet, number)	165	145	186	185
	Money in Circulation (in millions of dollars)‡	$27,151	$27,259	$26,976	$27,454
	Department Store Sales (changes from like wk. a yr. ago)‡	+8%	+5%	+25%	−4%
	†Preliminary. ‡Federal Reserve Board.				
FINANCE	Bank Clearings (Dun & Bradstreet—millions)	$15,056	$12,793	$15,328	$12,830
	Federal Gross Debt (billions)	$258.1	$257.8	$257.6	$256.5
	Bond Volume, NYSE (millions)	$22.7	$13.4	$19.7	$14.3
	Stocks Sales, NYSE (thousands of shares)	10,890	5,855	8,323	6,812
	Loans and Investments (billions)†	$68.5	$68.6	$67.9	$65.7
	United States Gov't. Obligations Held (millions)†	$34,698	$35,082	$35,154	$37,378
	†Member banks, Federal Reserve System.				
PRICES	STEEL's Weighted Finished Steel Price Index††	156.99	156.99	156.99	152.52
	STEEL's Nonferrous Metal Price Index‡	217.1	210.6	200.2	180.3
	All Commodities†	175.6	174.7	174.2	167.7
	Metals and Metal Products†	168.9	167.7	164.9	154.6
	†Bureau of Labor Statistics Index, 1926=100. ‡1936-1939=100. ††1935-1939=100.				

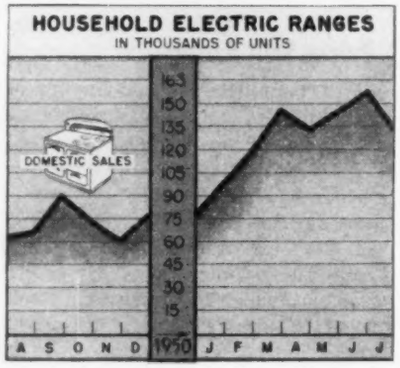


Electric Refrigerators

Domestic Sales—Units

	1950	1949	1948
Jan.	364,002	380,853	272,121
Feb.	450,751	337,424	281,580
Mar.	572,691	369,216	338,109
Apr.	531,498	324,370	330,720
May	528,506	330,753	317,763
June	534,489	296,199	373,115
July	490,802	315,444	351,094
Aug.	.....	307,622	281,345
Sept.	.....	309,429	344,260
Oct.	.....	252,580	380,854
Nov.	.....	221,221	374,470
Dec.	.....	259,158	330,660

National Electrical Mfrs. Assoc.

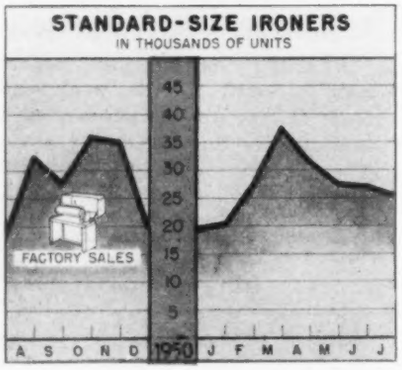


Household Electric Ranges

Domestic Sales—Units

	1950	1949	1948
Jan.	97,925	106,473	103,585
Feb.	118,989	87,370	103,506
Mar.	145,417	87,543	127,461
Apr.	132,859	59,894	104,677
May	144,093	52,286	98,983
June	158,534	68,107	123,300
July	130,505	62,402	83,485
Aug.	.....	66,222	116,107
Sept.	.....	91,073	128,829
Oct.	.....	72,672	122,516
Nov.	.....	60,523	123,661
Dec.	.....	77,011	105,387
Total ..	.....	903,806	1,341,497

National Electrical Mfrs. Assoc.



Standard-Size Ironers

Factory Sales—Units

	1950	1949	1948
Jan.	20,300	28,300	40,192
Feb.	27,600	28,400	51,651
Mar.	37,800	23,800	53,686
Apr.	31,600	18,100	47,319
May	27,400	19,500	44,954
June	27,100	21,100	32,767
July	25,100	17,700	26,679
Aug.	.....	32,300	35,203
Sept.	.....	27,700	37,308
Oct.	.....	36,045	38,517
Nov.	.....	35,000	42,000
Dec.	.....	19,400	26,000
Totals ..		307,345	476,860

American Washer & Ironer Mfrs. Assoc.

Charts—Copyright, 1950, STEEL

brings the total for the first 37 weeks this year to $8481 million, 46 per cent ahead of the corresponding 1949 period. Private construction awards during the week totaled $123.3 million and public works were $96.4 million. The private construction total for the year is now $4952 million and public works aggregates $3529 million.

Truckers Busy . . .

Volume of freight transported by motor carriers in July was 3.2 per cent below June but 34.2 per cent above July, 1949. Statistics compiled by American Trucking Associations show these carriers transported 4,139,239 tons in July, compared with 4,277,036 tons in June and 3,085,099 tons in July a year ago. About 75 per cent of all tonnage was hauled by carriers of general freight. Transportation of petroleum products accounted for 12 per cent of total tonnage. Carriers of iron and steel hauled about 8 per cent of total tonnage.

Purchasers Views . . .

Purchasing agents surveyed by the Purchasing Agents Association of Chicago say deliveries are slower and prices higher. In both cases the response shows few companies are exempt from these conditions. Slower deliveries in August were experienced by 90 per cent and higher prices by 95 per cent. Lower inventories are experienced by one-third the companies. The same or higher employment in relation to a month earlier was reported by 99 per cent. Eight of ten report higher backlogs.

Factory Hiring Mark Set

More than 620,000 employees added to industrial payrolls in month

ADDING more than 620,000 workers to their payrolls between mid-July and mid-August the nation's factories broke all previous hiring records. Preliminary estimates by the Bureau of Labor Statistics indicate nearly 15.4 million persons were employed in manufacturing industries at the close of the period covered in the survey.

Further increases in mining, contract construction, transportation and public utilities, trade and government carried total employment in nonagricultural industries above 44.9 million. This total represents an 880,000 gain over the preceding month and is nearly 2 million higher than in August, 1949. Except for March and April, 1946, when more than 1.3 persons returned to work following the steel strike, factory employment has never risen as much as 400,000 in a single month.

Again in the Lead—Durable goods industries were primarily responsible for the sharp increase in manufacturing employment. They added 306,000 workers to their payrolls to fill the volume of orders stimulated by international developments.

Largest increase was 46,000 and occurred in the electrical machinery group. Lumber, furniture, stone, clay, and glass, fabricated metal products and miscellaneous groups all showed employment increases of 4 per cent or better. Employment in the transportation equipment group rose 36,000 or 2.8 per cent. Most of this gain was in automobiles but both aircraft and shipbuilding indicated the beginning of an upward trend.

Hurry, Hurry—Contractors endeavoring to meet their building commitments added 65,000 workers to their payrolls in August pushing the industry's employment to an alltime high of 2,589,000. In nondurables most gains were seasonal in nature. Transportation and government divisions increased their employment by 41,000 and 57,000, respectively.

Marmon Gets Big Order

An order for 349 trolley coaches at an aggregate cost of $5,979,417 was placed with Marmon-Herrington Co. Inc., Indianapolis, by the Chicago Transit Authority. The purchase is part of the authority's ten year $150 million program for modernizing its facilities and rolling stock.

This large order comes less than

four years after Marmon-Herrington's entry into the trolley coach field. More than 1000 of these units are now in operation in major cities putting the company into a leading position in this field.

In addition to its line of trolley coaches the company also makes motor coaches for the transit field and a complete line of All-Wheel-Drive trucks for the more difficult hauling operations.

Allocations Despite Peak Output

Operations in many of the American Radiator & Standard Sanitary Corp. plants are at an alltime high, says Theodore E. Mueller, president. They parallel the great activity in the building industry. August shipments exceeded those of any previous month. Since orders at hand are also at record levels, allocation of company's products is necessary.

American-Standard is a large buyer of pig iron for use in cast iron bathtubs, sinks, laundry trays, boilers, radiators and furnace sections. It also operates a blast furnace, situated outside Buffalo, where a special quality graphitized pig iron is produced. Although threatened by shortages in raw materials, such as steel for boiler jackets, and soda ash, a component of enamel powder, American-Standard has been able to obtain the materials needed for producing its constantly increasing commitments.

Backlog at 18-Month High

American Car & Foundry Co.'s backlog amounted to 13,611 freight cars on Sept. 15 and is the largest since April, 1949, says Charles J. Hardy, chairman. Major orders include 1500 box cars for the Pennsylvania, 2000 hoppers for the Chesapeake & Ohio, 1000 box cars and 1000 tank cars for the Union Pacific, 1000 box cars for the Baltimore & Ohio and 800 gondola cars for the Santa Fe.

Ironer Price Pared

Reduction in the price of its ironer for a 30-day promotional campaign is announced by Thor Corp., Chicago. Purpose of the reduction from $99.50 to $79.50 is to capture a considerable part of the market, says M. R. Wilson, general sales manager.

The company had stockpiled ironer parts for the campaign prior to the outbreak of the Korean war and decided to go ahead with original plans, Mr. Wilson explains. Thor recently boosted prices of its clothes washers and dishwashers $5 to $10.

War Contract to Hallicrafters

Receipt of $6 million in war contracts is announced by William J. Halligan, president, Hallicrafters Co., Chicago.

These orders bring the total of war contracts to $12 million scheduled for delivery in the next 12 months. Mobile two-way radio communications stations will be the principal items manufactured under the orders.

Mr. Halligan says the radio and television industry can provide all the electronic equipment presently needed by the government without seriously interfering with regular production. So far this year Hallicrafters has delivered about $3,250,000 in electronic equipment on government contracts.

Business Expanding at Accelerated Pace

REVISION in the amount industry plans to spend for new plant and equipment bring the total for this year to $17,870 million. Since the outbreak of hostilities in Korea these expenditures were given an extra boost.

The joint survey by the Commerce Department and securities & Exchange Commission shows outlays in the second half will be $9.8 billion and will top those in the like period a year ago by $840 million. Spending in both the third and fourth quarters will be higher than in the similar periods last year. These larger expenditures are not enough to overcome the decline in the first half when actual outlays were $8 billion this year and $9.1 billion in 1949.

Shown in the chart are actual plant and equipment expenditures by all business except agriculture in the last three years and the estimated total for this year. The table gives the breakdown by industry groups for the same years and a quarterly summary for this year.

1947—$16,180

1948—$19,230

1949—$18,120

1950—$17,870

1950 Figures Estimated

No Bragging—Anticipated outlays for the third quarter are $5060 million and fourth quarter is expected to add $4780 million. If previous experience with fourth quarter estimates is repeated, actual expenditures in that period will be higher.

Larger expenditures by manufacturing companies in the last half of 1950 account for virtually all the anticipated increase in aggregate outlays over the second half of 1949. In 1949's second half manufacturing companies spent $3.5 billion on plant and equipment, compared with planned expenditures of $4.4 billion, an alltime high, in the last six months this year. Manufacturing companies' total for 1950 will be $7.8 billion, compared with $7.2 billion in 1949.

Generators and Pipelines—Capital outlays for electric and gas utilities are expected to be at peak levels this year. All other industry groups are at this time anticipating smaller expenditures in 1950 than a year ago because of the decline in first half outlays.

Actual expenditures for the second quarter were about 4 per cent lower than previously estimated. Reason: manufacturing companies and electric and gas utilities did not spend as much as anticipated. For the third quarter present estimates of expenditures are about 13 per cent higher than previous estimates.

Plant, Equipment Outlays Revised Upward

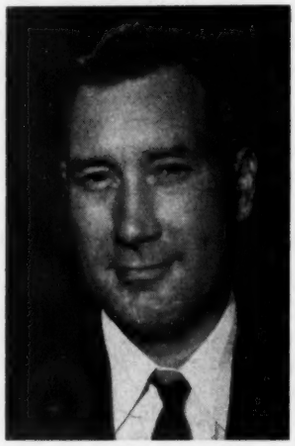
Figures in millions of dollars	1947	1948	1949	1950 Jan.-Mar.	1950 Apr.-June	1950 July-Sept.*	1950 Oct.-Dec.*
Manufacturing	7,460	8,340	7,250	1,520	1,860	2,270	2,150
Mining	690	800	740	150	160	180	160
Railroads	910	1,320	1,350	230	300	320	280
Other Transportation	800	700	520	80	90	110	120
Electric and Gas Utilities	1,900	2,680	3,140	650	760	910	850
Commercial and misc.	4,430	5,390	5,120	1,060	1,160	1,260	1,220
Total	16,180	19,230	18,120	3,700	4,330	5,060	4,780

* Estimated. Note figures are rounded and not necessarily add to totals. Source: Commerce Department, SEC.

Men of Industry

HYNES SPARKS
. . . president, Symington-Gould

JAMES M. CRAWFORD
. . . mgr. of divisions at General Electric



LAURENCE H. CARR
. . . Edward Valves, director-eng. & research

Hynes Sparks, vice president, **Symington-Gould Corp.,** Depew, N. Y., was elected president, effective Oct. 1. He will continue in charge of general sales policies and will make his headquarters in the New York office. He succeeds **Peter F. Rossman,** who has resigned as president of Symington-Gould to accept an executive appointment with Hupp Corp.

C. S. Allen was appointed general manager, **Star-Kimble Motor Division,** Miehle Printing Press & Mfg. Co., Bloomfield, N. J. He joins Star-Kimble after association with A. O. Smith Electrical Mfg. Co., Los Angeles, where he was vice president and general manager. Other recently announced Star-Kimble personnel are: **James M. Adair,** manager of sales; **R. S. Reed,** assistant sales manager; **Louis Pedersen,** works manager; and **S. Anton Wladis,** comptroller.

A. H. Shonkwiler was appointed assistant general manager of the Steubenville Works, **Wheeling Steel Corp.,** Wheeling, W. Va. He has been associated with Bethlehem Steel Co.

De Laval Steam Turbine Co., Trenton, N. J., appointed **Robert F. Curry** to the Detroit office as a sales representative.

Maurice N. Trainer, first vice president, **American Brake Shoe Co.,** New York, was elected president. **William B. Given Jr.,** president for 21 years, was elected chairman of the board.

William I. Caldwell was appointed director of research at **Taylor Instrument Cos.,** Rochester, N. Y. He succeeds **Nathaniel B. Nichols.**

James M. Crawford was named manager, transformer and allied products division, apparatus department, **General Electric Co.,** Schenectady, N. Y. He was manager of the department's large motor and generator divisions, and succeeds **Robert Paxton,** recently appointed vice president and manager of manufacturing policy for the company. Mr. Crawford will be located at the T.A.P. divisions' headquarters at Pittsfield, Mass. **James M. McGarry** was appointed manager of advertising and sales promotion for the apparatus department's St. Louis office, mid-states district.

John H. Burch was appointed sales manager, Detroit district, **Wickwire Spencer Steel Division,** Colorado Fuel & Iron Corp., New York. He succeeds **L. A. Watts,** who will devote full time as sales manager, wire and pig iron and semifinished steel departments of the Wickwire Spencer Steel Division. Mr. Watts continues headquarters in Buffalo.

J. F. Novy was appointed district appliance sales promotion manager, northwestern district, **Westinghouse Electric Supply Co.,** Westinghouse Electric Corp. He succeeds **C. R. Lunney,** who was called into military service.

John H. Strome was appointed industrial relations manager, **Inland Steel Container Co.,** Chicago. He has been safety director since 1948 of iron ore mines and limestone quarries of Inland Steel Co., parent company. In his new capacity Mr. Strome will be transferred from Ishpeming, Mich., company iron mining headquarters, to Chicago.

Laurence H. Carr was named director of engineering and research for **Edward Valves Inc.,** East Chicago, Ind. He has been a member of the company's technical staff since 1936, and previously was chief metallurgist. In his new position he will be responsible for consolidating the development functions of engineering research, product engineering and technological specifications for process control.

Alexander T. Burton was elected vice president, **North American Aviation Inc.,** Inglewood, Calif.

Graham W. Corddry was elected vice president in charge of sales, **Titanium Pigment Corp.,** subsidiary of National Lead Co., New York. **K. W. Ericson,** formerly western sales manager, succeeds Mr. Corddry as general sales manager. **H. L. Jungmann** continues as assistant to the general sales manager. **John A. Lutz,** formerly manager, technical service department, was appointed eastern sales manager succeeding **W. H. Woods** who succeeds Mr. Ericson. **E. G. Burling** continues as Pacific Coast sales manager, with headquarters in Los Angeles. **Norman E. Olson** was appointed a district sales manager in charge of the Chicago area and midwestern and southern states west of the Mississippi river, with headquarters in Chicago. **F. R. Hodgson** was named a district sales manager, with territory consisting of the Cleveland area and midwestern and southern states east of the Mississippi, with headquarters in Cleveland. **James MacGuffie** was appointed manager, tech-

Is MOISTURE your magnet problem?

Here's an Ohio lifting magnet that operates underwater 50 percent of the time, retrieving hot crop-ends from a cooling pit. It is a standard Ohio bolted-type magnet which has not been waterproofed in any way!

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For longer magnet life and greater dependability, why not send your next order to Ohio—*25 years a leader in magnetic materials handling.*

Remember this picture next time you buy!

SELECT YOUR MAGNET from two Ohio types. The PROTECTO-WELD magnet, shown here, is made in 39, 46, 55 and 65-inch diameters. Bolted construction types include these and other smaller sizes.

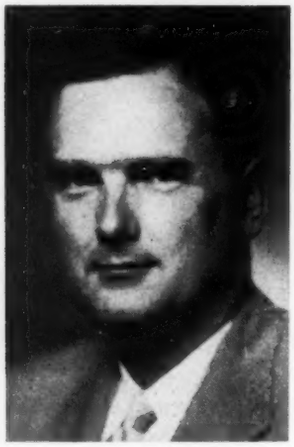
THE OHIO ELECTRIC MFG. CO. • 5900 MAURICE AVENUE • CLEVELAND 4, OHIO

ohio MAGNETS

A-1924

nical service department, Titanium Pigment Corp., with headquarters in New York.

F. T. Richardson was appointed director of public relations, **American Car & Foundry Co.,** New York.



F. T. RICHARDSON
. . . A. C. F. public relations director

He succeeds **Arthur Tuckerman,** who is retiring from business in order to resume his former profession of freelance writer for American and foreign publications. Mr. Richardson joined ACF as public relations assistant in 1947.

Fairbanks, Morse & Co., stoker and heating division, appointed **Russell M. MacDonald** as district sales representative for the New England area. With over 20 years' experience in the heating industry with such concerns as Mercoid Corp., Chicago, Lynn Products Co., Lynn, Mass., and Weatherall Engineers Inc., Providence, R. I., he will maintain headquarters at Salem, Mass.

Herbert J. Rieth was appointed assistant purchasing agent, **Purolator Products Inc.,** Rahway, N. J., manufacturer of Micronic automotive oil filters and other types of filtration equipment.

Horizons Inc., Princeton, N. J., announces addition to its staff of **John McGrath, David E. Bennett Jr.,** and **Oren R. Manning.**

Edward D. Rollert, former **General Motors Corp.** executive at Bristol, Conn., and Flint, Mich., was appointed as assistant to the general manager of the Buick-Oldsmobile-Pontiac Assembly Division to handle special defense assignments.

Frank Krause was appointed representative for northern New Jersey and the New York counties of Dutchess, Orange, Putnam, Rockland, Sullivan and Ulster by **Denison Engineering Co.,** Columbus, O. His headquarters is 306 New St., Garwood, N. J. **V. P. Preidis** is sales representative in the New England area working with district manager, **Francis R. Springer.** Both are located in Manchester, Conn.

Ohio Injector Co., Wadsworth, O., announces establishment of five major sales divisions, each functioning under a field manager who reports to **H. G. Smith,** vice president in charge of sales. New sales divisions and respective managers are: New York, **Daniel J. Mooney Jr.;** Atlantic, **Paul E. Warner;** Central, **W. G. Shepard;** Mid-Continent, **A. A. Kruse Jr.;** Pacific, **Denny Gordon.**

International Business Machines Corp., New York, announces the following promotions: **James H. Fraser,** manager of the laboratory since 1949, was named administrative assistant at the Poughkeepsie, N. Y., plant; **Ralph L. Palmer,** electronics engineer, made laboratory manager; and **Robert T. Blakely,** assistant engineer, appointed assistant to the laboratory manager.

Chester F. Conner, manager, industrial products sales, **B. F. Goodrich Co.,** Akron, was placed on the company's retirement payroll and new appointments have been announced: **Paul W. Van Orden** was named industrial products merchandise manager, **Richard G. Cox,** manager of original equipment sales, **Wilfred A. Smith,** manager of molded, extruded, lathe cut and sponge sales, and **George J. Fischer,** manager of "V" belt and packing sales.

Donald F. Dimock was named Michigan district sales manager, **National Electric Products Corp.,** Pittsburgh, with headquarters in Detroit.

Henry A. Rome was appointed manager of special products sales, **William C. Hall,** manager of molded goods sales, and **Thomas S. Savoury** as manager of flooring sales for the mechanical goods division, **United States Rubber Co.,** New York. They will have headquarters in the company's Passaic, N. J., plant.

New appointments in the hydraulic department, **Allis-Chalmers Mfg. Co.,** Milwaukee, include: **Emil Gross,** former mechanical engineer, named chief engineer; **Frank Jaski,** former hydraulic engineer, now assistant chief engineer; **B. R. Nichols,** former assistant mechanical engineer, promoted to mechanical engineer; and **Ralph W. Hawkins,** former assistant engineer, named assistant mechanical engineer. Mr. Gross succeeds **Col. Joseph J. Ring,** who, because of health, retired in 1949. **Paul D. Hess** was appointed hydraulic engineer and **Arthur Bruss,** chief draftsman.

George O. Nations was appointed assistant to general manager of sales, **National Tube Co.,** subsidiary, **U. S. Steel Corp.,** Pittsburgh, **Albert J. Graf Jr.** succeeds Mr. Nations as the company's manager of claims, and transfers from the New York sales office to Pittsburgh.

Robert D. Gleadal was named purchasing agent of **Standard-Thomson Corp.,** Dayton, O. He formerly was with M. J. Gibbons Supply Co. and Dayton Pump & Mfg. Co.

Harvey B. Greene, assistant to the president, **National Automotive Fibres Inc.,** Detroit, was elected assistant secretary and assistant treasurer in addition to his present duties.

J. Lester Perry, former president, Carnegie-Illinois Steel Corp., Pittsburgh, was elected a director of **Flannery Bolt Co.,** Bridgeville, Pa. He succeeds **Marvin W. Smith,** president of Baldwin Locomotive Works, who resigned the directorship.

Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y., appointed **Robert H. Burdsall** as manager of market development and advertising. Associated with the company since 1925, he most recently headed Port Chester district sales.

ROBERT H. BURDSALL
. . . Russell, Burdsall & Ward adv. & markets

Gerald C. Quinn was appointed supervisor of industrial press relations,

Allis-Chalmers Mfg. Co., Milwaukee, to succeed **N. H. Jacobson,** who was named to a newly created position with the Atomic Energy Commission at Washington. Mr. Jacobson will assume his new position Oct. 1.

Miles L. Erickson and **Thomas Hancock** were elected vice presidents of **Trane Co.,** La Crosse, Wis. Mr. Erickson, who has been with the firm since 1935, is associated with the company's eastern manufacturing division convector plant at Scranton, Pa. Mr. Hancock joined the organization in 1934 as an advertising assistant. He is now in charge of all company sales.

Paul Deringer, former Chicago district sales manager for Fansteel Metallurgical Corp., now heads a new company, **Deringer Metallurgical Corp.,** which has set up a plant in Schiller Park, Ill. The company will make electrical contacts and other specialties.

J. M. Gwynne was appointed manager, engineering sales, building products section, parts division, **Reynolds Metals Co.,** Louisville. Since August, 1947, Mr. Gwynne has been executive vice president and general manager, Metal Arts Mfg. Co., Atlanta.

Bausch & Lomb Optical Co., Rochester, N. Y., appointed **Dr. Kuan H. Sun** as a special consultant in optical glass research.

RALPH G. LAGERFELDT
. . . exec. vice president, Colonial Broach

HARRY GOTBERG
. . . Colonial Broach vice president

Colonial Broach Co., Detroit, announces the following appointments: **Ralph G. Lagerfeldt,** formerly vice president in charge of sales, was named executive vice president. **Harry Gotberg,** formerly chief engineer, was named vice president, and will supervise sales engineering, experimental engineering and estimating. **W. Kukuk** was appointed factory manager. **Ben F. Welte,** formerly assistant chief engineer, was made chief engineer, with **Glen Harmon,** assistant chief engineer. **Hans Reitz** was named superintendent of machine construction.

M. O. Walker, formerly process engineer with the coated products division of Carborundum Co., Niagara Falls, N. Y., was named chief chemist, **Michigan Abrasive Co.,** Detroit.

James E. Dunlap was appointed personnel director, **National Motor Bearing Co.,** Redwood City, Calif.

Wigton-Abbott Corp., Plainfield, N. J., appointed **James F. Smythe** to the position of contracting engineer.

Duke Bailey was appointed manager of Eastern Electrical Supply, a new division of **Supplee-Biddle-Steltz Co.,** which is located at 348 Washington St., Newark, N. J. **Abe Beller,** former president of Eastern, is now affiliated with Supplee-Biddle-Steltz Co. in a sales capacity.

OBITUARIES...

William W. Criley, 54, vice president and general manager, **Ajax Mfg. Co.,** Cleveland, died in Coblenz, Germany, Sept. 19 after an illness of only a day. He had been associated with the Ajax organization for 31 years.

Emil H. Erickson, 74, vice president and director, **Trane Co.,** La Crosse, Wis., manufacturer of equipment for air conditioning, heating and ventilating, died Sept. 12. As general superintendent Mr. Erickson actively directed Trane's manufacturing operations during World War II.

William R. Reid, 71, chairman of the board, **Torrington Mfg. Co.,** Torrington, Conn., died Sept. 16 after a short illness. He began his career with the company 50 years ago, became president in 1924, and board chairman five years ago.

K. B. Howell, 60, president, **Kendall Corp.,** Milwaukee, died Sept. 13 after a cerebral hemorrhage. He organized the machine manufacturing company in 1931. He also was president of Mercon Regulator Co.

Dr. John Johnston, 69, until retirement in 1946 director of research for **United States Steel Corp.,** New York, died Sept. 12 at Bar Harbor, Me. An expert on iron alloys he devoted most of his life to metallurgical research for large corporations. In the 1920s he was chairman of the Yale University chemistry department.

Dr. John C. Southard, 43, director of research, **Solar Aircraft Co.,** San Diego, Calif., died Sept. 4.

W. Frank Titus, 56, supervisor of engineering research laboratories, **SKF Industries Inc.,** Philadelphia, died Sept. 11 of a heart attack while attending a meeting in the ball and roller bearing company's offices.

David G. Anderson, 65, foundry consultant, Clarendon Hills, Ill., with more than 40 years' association with the foundry industry, died in that city Sept. 10. He had established his consulting service 18 months ago after having served two years as consulting foundry engineer on the staff of **National Foundry Association,** Chicago.

Henry J. Rente, 88, former vice president, **American Radiator & Standard Sanitary Corp.,** died Sept. 13 at his home in Buffalo. He was named vice president and director of boiler manufacturing for the company in 1919.

Harold H. Robertson, 72, chairman of the board of **H. H. Robertson Co.,** Pittsburgh, died Sept. 19.

David R. Rutter, 74, who organized the advertising department of **E. I. du Pont de Nemours & Co. Inc.** in 1909, died Sept. 16 at his home in Wilmington, Del., after a long illness.

E. H. Probert, 50, former owner of **Probert Mfg. Co.,** Los Angeles, died Sept. 8. He operated the business until last February when illness forced him to sell it.

Leading Manufacturers buy-*

AMERICAN WELDING

RINGS — BANDS
WELDED PRODUCTS

Many finished products of leading manufacturers contain important component parts fabricated for them by The American Welding and Manufacturing Company.

When our 32 years of fabrication-by-welding experience is applied to many products we are able to show economy in production that results in worth-while savings, as well as improvement in quality.

Skilled designers, engineers, and metallurgists are at your service. Complete fusion and resistance welding equipment is applicable to ferrous, non-ferrous, and alloys. Heat-treating and machining facilities are available.

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ALLIS-CHALMERS
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GENERAL STEEL CASTINGS
GOODYEAR TIRE & RUBBER
INTERNATIONAL HARVESTER
PRATT & WHITNEY
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WESTINGHOUSE

● *SEND FOR 20-PAGE CATALOG*

THE AMERICAN WELDING AND MANUFACTURING COMPANY

110 DIETZ ROAD • • WARREN, OHIO

Production AND Engineering
NEWS AT A GLANCE

FAST METAL STRIPPING— Nickel, tin, and chromium can be stripped from brass, copper and copper base alloys at rates as high as 0.006-inch per hour when using a new metal stripper developed by Enthone Inc., New Haven, Conn. Process involves no current. Work to be stripped is simply immersed in an acid solution containing the stripping material. Procedure, the company says, is ideal for removing nickel from bulk-plated work as well as heavier plated objects. It also works well in removing nickel and chromium from plating rack tips.

COMPETITION FOR THE COAXIAL CABLE— Ordinary enameled wire may replace the use of coaxial cables in transmitting ultra-high frequency signals. The Office of Technical Services, Washington, says that a novel transmission method, developed by Dr. Georg Goubau for the Army Signal Corps, employs a hitherto-unexploited principle that nonradiating cylindrical surface waves can be guided by a conductor that is coated with a dielectric layer, or the surface of which has been otherwise modified. Thus surface wave transmission lines using special horn-shaped signal-launching devices can be built to operate with lower loss than coaxial cables, or even than rigid wave guides.

COUPLINGS NOW BRIGHT FINISHED— Cleaner and brighter finishes are now provided couplings as result of an improved electro-plating process employed at the Etna, Pa. plant of Spang-Chalfant Division, National Supply Co. The method includes the addition of a nitric acid bath between the hot and cold rinses. Couplings are now galvanized on the outside by the hot dip process. On the inside, they are given a galvanized coating by the electro-plating process. On sizes ½-inch up the plating is controlled so the entire thread area of the coupling is covered with zinc to ward off corrosion.

LONG HAUL— At Superior Steel Corp., Carnegie, Pa., coils of hot steel strip weighing 300 to 2400 pounds are cooled on a 960-foot Link-Belt continuous overhead conveyor while enroute to the stockhouse. The conveyor which travels at a speed of 5 to 15 feet per minute, dips down to the loading position at the coiler and transfer carriage, then rises to a height of 17½-feet above the floor to pass across one end of the mill building to the outside. It then travels over a plant driveway and along side the drive and into the stockhouse.

BREAKS MAKE PERFECT FIT— If you want two mating parts to fit perfectly, first make them as a whole unit, then break them. That is how Parks Engineering Inc., Milwaukee, makes what it calls a "perfect alignment" connecting rod. In the operation Parks first machines the connecting rod from a forging with a round boss at the crank end, allowing no stock for cutting the cap from the rod. The forging is rough machined, heated and partially finish machined in one piece. Then, with screws partly started in the screw holes, the cap is broken from the rod along a well defined and confined area. It is reassembled by tightening the screws, with the minute irregularities of the break acting as small dowels. Realignment, company says, is so perfect that the bearing hole can be ground and honed to within 0.0001-inch of a perfectly round and straight hole.

GOOD PLACE TO START—If cutting tools play an important part in your operations, and you are faced with the possibility of honoring defense contracts on top of your current business, you might check your tool crib situation. A good housecleaning and institution of a systematized, co-ordinated tool program provides many benefits. It promotes efficiency, reduces inventories, minimizes obsolescence. It also pays off by reducing tool costs, saving materials and labor. (p. 70)

BUMPER WELDING CHANGES— As auto bumper guards get longer and larger, the job of attaching them to bumper rails gets more complicated. Several methods have been used to date with varying degrees of success. The latest, a stud welding procedure evolved for Frazer cars, requires no skilled operator and produces about 300 welds per hour without strain. Special fixtures play an important part in the joining operation. Weld cycle is preset on a three-element cam timer unit, setting being determined by the size of stud to be welded. Action of the gun is automatic after being started, but may be interrupted if necessary. (p. 74)

NEW COOLANT APPROACH—Old problem of deciding on which coolant to use in general all-around machining no longer is vexing to Oliver Corp., Cleveland. The company developed a test method which it feels is sufficiently accurate to guide all future decisions. The technique is a new approach in that it involves measuring the effectiveness of an emulsified oil by determining the loss of weight in a tool after a predetermined number of work pieces are machined. (p. 77)

DEFIES GRAVITY—Materials can be conveyed at angles of as much as 20 degrees when riding on the new self-centering rolls developed by E. T. Lorig of Carnegie-Illinois Steel Corp. Tested on run-out tables, gravity conveyors and belt pulleys, the rolls keep materials centered by "planer action"—a hitherto unused natural force. Development is expected to have almost unlimited application in many industries, and may possibly cause many changes in material conveying methods. (p. 83)

By JAY DeEULIS
Engineering Editor, STEEL

Tool Control Begins at the Crib

Introduction of a co-ordinated cutting tool program in your plant automatically transforms that traditional "loafing" area into an efficiency center. It also pays off in reduced inventories and costs. At Tapco, two divisions saved $114,512 in nine months

IF YOUR company faces the likelihood of honoring defense contracts on top of your current business, better take a look at your tool cribs.

Cutting tools will increase in importance as more defense orders are received by industry. That means the tool crib can be a good starting point in getting ready for the coming rush to place your operations on a more efficient basis.

Furthermore, there is "gold" to be found in the cribs. A good "housecleaning", and institution of a systematized, co-ordinated tool program provides many benefits.

Besides promoting efficiency, it pays off surprisingly—in reducing tool costs, saving materials and labor. It reduces inventories and minimizes obsolesence.

Plugs Many Leaks—Such a program even goes further. It reaches into your tool grinding department and prevents the men there from spending too much time in regrinding old tools; frees their time to such an extent that more time can be spent in modifying the new tools you may need. It makes inventories a "finger-tip" proposition. You always know the case history of each tool.

At the Tapco Division of Thompson Products, Cleveland, for example, cost reductions effected in the maintenance of tools as result of a co-ordinated tool program proved amazing. Analysis of the results over a nine-month period indicated that controls established in the tool grinding department reaped more benefits than originally anticipated.

Costs Drop—Before inception of the program, average standard hour cost for jet division tool grinding at the company was 16 cents. Average cost during the nine-month period dropped to 11.6 cents. Based on these figures, the jet division savings in tool maintenance amounted to $68,013 for the nine months. The same held true for the valve division where savings for the same period amounted to $46,499. Total savings for both divisions was around $114,512. This is an average saving of $12,723 per month or an expected annual saving of $152,676, if production remains somewhere near the current level.

In the past, there was always a definite lag in the reduction of total cost when needs for services were reduced, due to the drop in productive labor hours. For example, people who furnished these services did not immediately reduce their specialized manpower needs to suit the situation—hoping that the need would arise soon to justify keeping personnel on the job. This always increased standard hour costs. Data compiled for the tenth and eleventh months indicated that standard hour costs for jet divison tool grinding remained constant even though there was a considerable drop in the standard labor hours. Without controls this cost would have lagged behind the drop in productive output, illustrating the function of control.

Tool Usage Declines—One chart showed that the number of tools used per standard hour in the valve division declined steadily for the last three months plotted. Only the more costly tools used in one line kept the division from showing further improvement. Typical decrease in tool usage was plotted on another chart which also showed the gradual drop in the number of tools ground per standard hour on one line. The grinding cost curve on this chart also reflected lower tool usage.

The program at Tapco also was far reaching in its corrective measures. It enabled the company to reduce its stock of standard carbide tools and blanks from which cutting tools are fabricated.

A year ago, Tapco had a 145-day inventory of standard tools and tips. Now, due to standardized tool drawings, it operates with a 30-day supply. The program even smoothed out a situation in the tool

ACTIVE TOOL RECORD T-454 — F — ST. TOOL AL 85 GR 78c

TOOL NO. DC 5157 — CODE NO. — MADE FROM

DESCRIPTION: TURNING TOOL - BULLARD - FR HJ-18629

DATE	LINE	PCS GR	PCS SCRAP	DATE	LINE	PCS GR	PCS SCRAP
12/5-17 '49	429	1	DEC. '49 '47	2/27-3/11	432	205	
	432	367		3/13-25	432	183	MAR - 20
12/19-31 '49	432	256		3/27-4/8	432	347	
1/3-14 '50	432	270	JAN '50 23	4/10-4/22	432	132	APR-13
1/16-28	432	189		4/24-5/6	432	67	
1/30-2/11	432	251	FEB-23	5/8-5/20	432	48	
2/13-25	432	391					

Fig. 1—Simple card setup with information indicated keeps tool co-ordinator up-to-date on all active tools

OOL GRINDING REPORT

VALVE DIVISION

EEK OF 5/8 TO 5/20 1950 SHEET 1 OF 6

OL NO.	QUANTITY OF TOOLS GROUND FOR EACH LINE																TOTAL
	403	404	405	406	407	408	409	411	412	413	414	415	417	418	475 5		
C 44														25			25
134														8			8
152-1														144			144
866-1-2		6															6
505														119			119
107-1-2		50 PR.															50 PR.
918-1-2	138 PR.	94 PR.															232 PR
72-142																	
126																	

Fig. 2 — Typical grinding tool report. This is made to the co-ordinator on a weekly basis

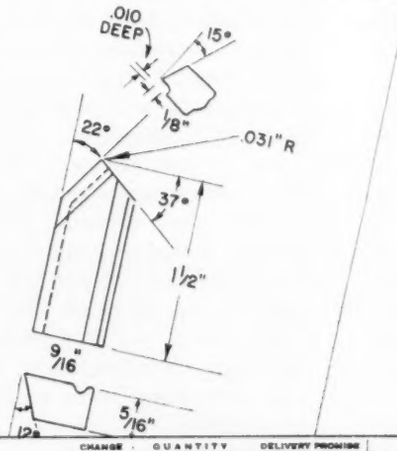
Fig 3 (right) — Carbide performance check sheet submitted by the tool standards group

Fig. 4 (below)—Form used to keep tabs on tools to be reground. First copy is retained by the standards group; second is the tool crib copy; third is the "dray" bill and fourth is factory accounting copy

CARBIDE PERFORMANCE CHECK

GRADE TESTED	O 3 Y	VENDOR	DATE 1-19-50
MATERIAL	A1S1—4340	HARDNESS CEMENTED CARBIDE	FR HJ—6507
OPERATION NO.	60	OPERATION ROUGH TURN SHAFT	
MACHINE AMERICAN PACEMAKER		CONDITION OF MACHINE ☐ EXCELLENT ☒ GOOD ☐ FAIR ☐ POOR	DEPTH OF CUT MAX. 3/2
SUBJECT		TEST PERFORMANCE	LENGTH OF CUT 52.412"
TOOL NUMBER	3 AND 4	DC 7422	PREVIOUS PERFORMANCE
BLANK NUMBER		SPECIAL	NONE – THIS TOOL ALREADY IN USE.
SPEED		168 R.P.M. 196 R.P.M.	
FEED		.020"	
TOLERANCE		±.005	
FINISH		GOOD	
PIECES PER GRIND		2	
NUMBER OF GRINDS PER TOOL		2	
PIECES PER TOOL		4	
OPERATIONS ELIMINATED		NONE	
CONDITION OF TOOL AFTER TEST		TOOL #3 BROKE AFTER SECOND PIECE-TOOL #4 CHIPPED & WORE ON NOSE RADIUS.	
RETURN MATERIAL FOR CREDIT? ☐ YES ☒ NO		REORDER FOR CHECK TEST? ☐ YES ☒ NO	
COMMENTS	THESE TWO TOOLS DO NOT MEET THE AVERAGE PERFORMANCE THAT HAS ALREADY BEEN PROVEN ON THIS JOB.		

TOOL SKETCH



PARTS SKETCH

EMERGENCY ORDER
DISPATCH ORDER - PLANNING

IDENTIFICATION DC 1714-2 CHANGE | QUANTITY 24 | DELIVERY PROMISE 1 DAY | No 380806

OUT: MASTER NO. | HOME DPT. | SHIFT | WORK DPT. | DAY RATE | ACT. HRS. | O.T. HRS. | DATE

IN: OPERATION NO. | PIECES | SUPERVISION APPROVAL | ACCOUNT NO. 8024 | DPT. CHARGE 405

REQ. NO.	OPER. NO.	SECT.	WORK STATION	SET UP	STD.	PROCESS & TOOLS	I. R. NO.

DESCRIPTION, MATERIAL REQ. ETC.

PLANNING COPY-RETAINED BY STANDARD'S GROUP UPON COMPLETION OF JOB.

SKETCH

DIVISION 4 DATE 5-12-49 REQUESTED BY DELIVER TO CRIB 5

FORM 744-17 REV. 8 PP & C

TOOL LAYOUT HJ-18606-15D | OPER. NO. 11/5

TYPE MACH. 36" KING | MACH. NO. | DATE 1-23-48 | SUPERSEDES HJ-18606-15D DATED 5-29-47

MATERIAL STAINLESS STEEL | COOLANT WATER & VANTROL

ACTUAL MACH. TIME | MIN. FLOOR TO FLOOR | MIN. STD. HRS. PER 100 | GR. NO. | NET PROD. | PER HR.

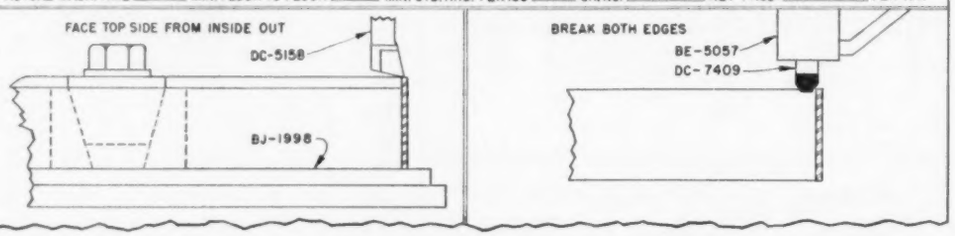


Fig. 5 — Typical layout sheet used by Tapco. Both upper and lower portions of the abbreviated sheet are shown

MACHINE EQUIPMENT & TOOLING — TOOL LAYOUT HJ-18606-15D | OPER. NO. 11/5

POS.	TOOL NO.	DESCRIPTION	R.P.M.	FEED	S.F.M.	C.T.	POS.	TOOL NO.	DESCRIPTION	R.P.M.	FEED	S.F.M.	C.T.
	LOAD												
	BJ-1998	EXPANDING FIXTURES											
	JF-3250	FIXTURE (ALT.)											
	BJ-1886	FIXTURE (ALT.)											
1st	DC-5158	CARB. FACING TOOL	32.6	.010									
2nd	DC-5169	CARB. CHAMFER TOOL	32.6	HAND									

grinding department which was of considerable concern to management. Too much time was spent in grinding old tools. The 127 men engaged in the operation did not seem to have enough time to modify new tools according to specifications. Result, a lot of farming out was necessary. Now, both new and old tools are being handled with only 80 men on the job.

No Self-Made "Tool Engineers"—Wasteful situations also are avoided. In some cases, these incidents were far from amusing so far as the company's tool budget was concerned.

W. S. Novy, Tapco's tool co-ordinator, related one incident which was fairly typical among the machine operators and tool crib attendants. An operator, he said, upon finding a cutting tool not to his liking, returned the tool to the crib, requesting the attendants to have it modified according to a sketch he drew. While the operator was trying out the modified tool the tool crib attendants proceeded to modify the remaining tools in stock. You probably guessed the outcome—the modified tool still was not the answer; result, loss of all tools modified.

Plus Budget-Gain—Interesting development resulting from the program, according to Mr. Novy, was the salvaging of about 17,700 tools and shanks valued at $24,986. These carbide tools, left over from war-production days, were made available for line use in many instances without any alterations. In one month alone, 2733 tools and shanks were reclaimed and placed into active use in the valve and jet division.

The salvaged tools ordinarily would have been sold at a loss or scrapped; instead, they are aiding the individual machine line budgets. Incidentally, these tools, identified by a green color in addition to the crib color, are the only ones at present allowed on the machines even though they do not appear on the work layout. They may be ground at tool grinding to the print specifications stamped on the shank, but are not to be used as an exchange for regular layout tools drawn from any of the seven tools cribs in operation at Tapco.

Flexible Program—The co-ordinated tool control program in use originally was based on Carboloy Co.'s "co-ordinated carbide control" plan. The program is of such a nature that it can be applied by individual manufacturers to suit their needs. It includes information on various tool control systems, complete training courses for in-plant training of personnel and a manual dealing with technical phases of tooling.

Out of this program, Tapco, with the aid of Carboloy advisers, evolved its own plan using only those features that applied. Before being placed in operation, a tool co-ordinator and several carbide tool engineers were appointed. An inventory also was made of all tools on the machines and tool cribs. Furthermore, all procedures to be followed by the tool cribs, grinding room, standards group and factory accounting were outlined and established to a set pattern.

The Man Who Makes It Work—King-pin of the whole operation at Tapco is the tool co-ordinator. He has at his finger tips at all times a record of all active tools, note Fig. 1. He also receives a weekly report from the tool grinding department, Fig. 2, and is cognizant of all performance checks on carbide tools by the form shown on Fig. 3.

A close check on tool modification costs is kept by means of the form shown in Fig. 4. This also serves as a means of controlling tools to be ground, and determines grinding room efficiency.

This same form, incidentally, is the "backbone" of the system that placed the grinding department in a position to take on more work with less man-

power, eliminating the necessity of farming out work.

How It Works—Its use begins with the attendant of the tool crib who accumulates dull tools into economical grinding lots. For example, here is what happens:

The attendants fills out the form every time a lot is ready for regrinding. He then removes the second copy and files it by print number. The order form then is placed in the carton of tools to be ground which is delivered to the central grinding department. Here, tool room standards group applies the standard grinding rates to the order form and it is passed on to the grinding department. The tools are now ready to process.

In the grinding room the supervisor signs the form okaying the work for the grinder. Both the original and fourth copy of the form then goes to the timekeeper until such time the work is processed. When the grinder finishes the job, he is "rung" out by the timekeeper who retains the fourth copy and forwards the original to the standards group.

Returned Work Double Checked—The third copy of the form, referred to as the "dray bill" is the record used by the supervisor to check the work before dispatching the processed tools back to the crib. This third copy goes back with the tools so the tool crib attendant can compare it with his previous second copy. If everything is in order, the second copy is forwarded to the tool co-ordinator.

In the meantime, the timekeeper accumulates all the fourth copies accompanying each job, accumulating a file for each man. At the end of the day, these are forwarded to factory accounting where charges are made to each manufacturing group requiring tool grinding services.

Rules Made To Stick—To keep a tight control over tools passed out to operators from the tool cribs, Tapco did two things:

First it established a set of regulations; second, a dispersal cycle. Both are strictly adhered to at all times.

The regulations are simple, to the point and easily understood. Briefly they are: 1. No additional tools are provided the operator other than those needed to run the job. 2. Tool pickup girls trade sharp tools for dull ones on an even exchange basis only. (Knowing when a tool is dull is no longer a guess work proposition. In most instances, the number of pieces to be obtained per grind is predetermined by the carbide engineer. This information is given to both operator and supervisor to insure that tools are pulled after a certain number of pieces or length of time.) 3. Upon completing a job, operator returns all tools and loan slips that will not be needed on the next job (this clears both machine and operator of further responsibility). 4. All broken or worn out tools must be accounted for at the crib servicing their respective lines. 5. No tools are issued from the crib that do not appear on the layout for the operation performed. Fig. 5 indicates a typical layout.

Here is how the dispersal cycle works:

If a machine operator wants a tool, he first fills out a tool loan order form. Note Fig. 6. The first two copies are turned over to the crib attendant who in turn disperses the tools to the man. The third copy of the form is taken back to the machine and kept there.

System at the Crib—In the meantime, the first copy of the tool order form is filed by machine number at the crib serving the window; the second copy is filed by tool number at the bin where the tool was taken out.

Thus when the tool is returned the operator surrenders his copy of the order with the tool. The crib attendant in turn hands him the copy with the machine number. This clears the man and the machine of the tool responsibility.

The crib attendant, upon replacing the tool on the shelf, removes the remaining copy at the bin.

Broken tool reports can only be made by the supervisor of the line where the tool was being used. Broken or damaged tools are replaced in line by making out the form shown by Fig. 7. No new tools are issued unless this form is completed and the damaged tool returned.

Fig. 6—Requisition or tool loan blank which must be filled out before a tool can be taken from the crib

TAPCO
TOOL LOAN ORDER

DATE _____ Nº 066115

MASTER NO. | GR.

MACH. NO.

QUANTITY	TOOL NO.	DESCRIPTION

YOUR GROUP IS RESPONSIBLE FOR THIS TOOL. IF IT IS LOST OR BROKEN IT WILL BE CHARGED TO YOUR MACHINE. KEEP THIS SLIP. EXCHANGE FOR CRIB COPY UPON TOOL RETURN.

SIGNED _____

Fig. 7—This is the form used by the line supervisor whenever a tool is broken or damaged

TAPCO
BROKEN OR DAMAGED TOOL REPORT

Nº 17264

DATE | MASTER NO.

TOOL NO.

TYPE MACH. | OPER. NO.

LINE | SHIFT | FR. NO.

REASON | DISPOSITION

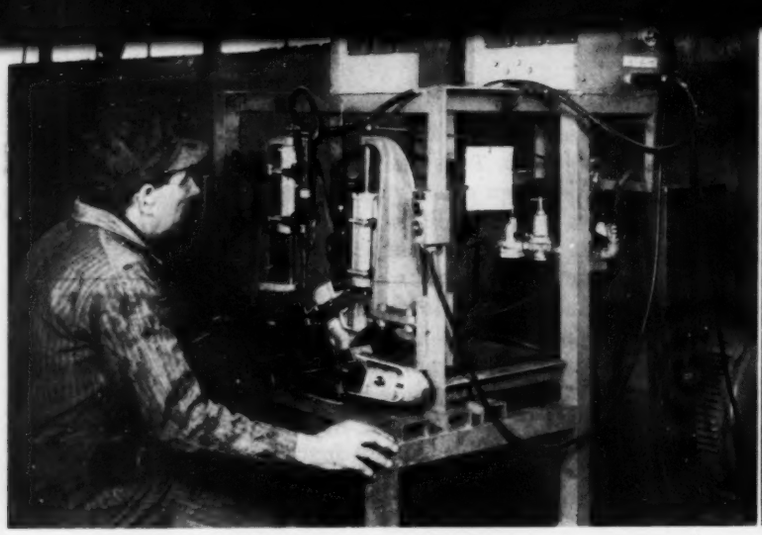
SCRAP ☐

SALVAGE ☐

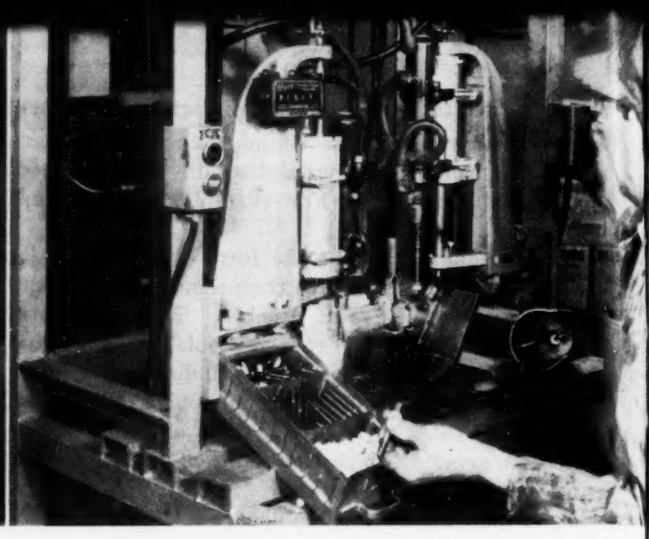
AMT. LOSS

SIGNED _____

NOTE: NO NEW TOOL FURNISHED WITHOUT THIS REPORT. BROKEN OR DAMAGED TOOL MUST BE RETURNED.



Welding studs to bumper guard begins with fixture in position to weld stud in nose of cap. Operation takes fraction of second after which gun retracts



In this view fixture is tumbled for second welding operation. Operator loads both studs and porcelain ferrules into both guns before commencing operations

Bulbous Bumper Guards Change Joining Procedure

Welding studs to auto bumper guards for further attachment to bumper rails of Kaiser cars gets around problem of cost and corrosion

By A. H. ALLEN
Detroit Editor, STEEL

ATTACHING bumper guards to bumper rails is getting more complicated and costlier as automotive bumpers progressively grow larger and longer, and bumper guards become more bulbous.

Old method of drilling a hole in the guard and bumper for inserting a through-bolt is in discard due to objections to unsightly bolt heads which also were focal points of corrosion.

Another method—that of welding a bracket or strut across the inside of the guard shell, with a carriage bolt staked into the center of the bracket for fastening the bumper—runs up cost since it calls for stamping out the bracket and hand-welding it to the guard. Further, strength of this arrangement is not overly great.

Several manufacturers electric weld threaded studs to the inside of the guard—found it a low-cost and rapid method of attachment. But precautions must be taken, because most guards have inner surfaces with curved or spherical contour at the point where the studs are to be welded, while the ends of the studs are flat. In addition, burning or dimpling of the outer surfaces must be avoided so excessive polishing or buffing will not be required before plating.

Enter: Another Method—Latest setup is an installation of Nelson stud welding equipment, featuring high speed and flexibility, employed by Ueber Tool & Mfg. Co., Detroit, for affixing studs to bumper guards for Kaiser automobiles and to bumper guard caps for Frazer models.

Accompanying illustrations show the equipment in operation on the Frazer guard caps. It comprises two single-gun production units, complete with air cylinders, magnetic air valves and electrical controls, mounted on a fabricated angle iron frame. A two-position tumble fixture is mounted on the frame to permit rocking back and forth under the two guns, inasmuch as the cap requires two studs positioned at different angles.

Stud in the nose of the cap is $\frac{3}{8}$ x 3 inches, the other $\frac{3}{8}$ x $2\frac{1}{8}$-inches. They are standard sizes, supplied by Nelson, and carry a small amount of granular welding flux in one end, covered by an aluminum cap. The guard cap itself is deep-drawn in a three-stage die from 13-gage (0.093-inch) cold rolled steel. This is rather unconventional since many of these guards are shallow drawn, with splits at each end, and then folded up to final shape and the end seams arc welded.

Both Guns Loaded—In the welding operation, the operator loads studs and porcelain ferrules into both guns. The part, following an alkali wash for degreasing, is placed in the locating fixtures and clamped securely with hand-operated toggle clamp.

Welding begins with fixture in position to weld the stud in the nose of the cap. Operator presses the start button, gun moves down to the work, lifts the stud slightly to strike an arc and then forces the stud down into the molten metal, all in a fraction of a second. Finally the gun retracts to loading position, after which the operator tumbles the fixture to the second position, actuates the start button and the same sequence is followed to make the second weld.

Gun-Action Automatic—Weld cycle is preset on a three-element cam timer unit, setting being determined by the size of stud to be welded. Action of the gun is automatic after the start button is pressed, although it may be stopped when desired by a second button. Power is supplied to the guns by a standard

400-ampere generator, and their movement controlled through 80-pound line air pressure.

Function of the porcelain ferrule, which has a serrated lower edge, is simply to contain the weld fillet. It is easily broken off after the stud is welded.

Production can be held easily to a rate of 150 caps per hour, or 300 welds, with no experienced operator needed. No special type of ferrule is needed, even though the stud in the nose of the cap is welded onto a spherical radius.

Double Output—The same equipment is readily adapted to welding studs in bumper guards for Kaiser models. These require only one stud each and by shifting the guns on the machine frame and installing twin fixtures or anvils, two pieces are handled at one time.

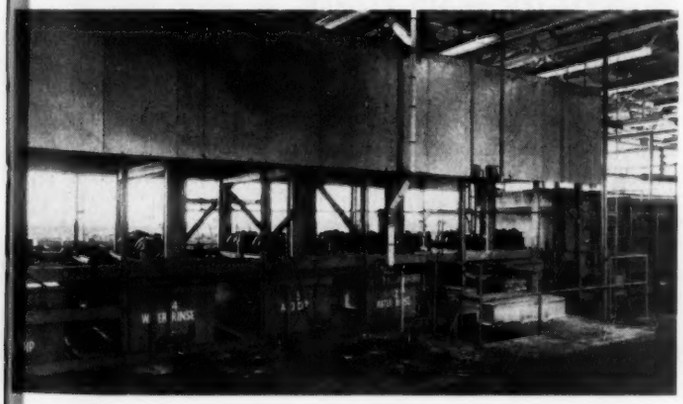
Another car manufacturer operates a variation of the above setup, using a single Nelson gun into which studs and ferrules are fed automatically, with ten guards clamped in fixtures on a rotary table which indexes under the gun. Each guard requires only one stud and all the operator needs to do in this arrangement is to load and unload the guards, and actuate the start button for the gun. Somewhat higher production is possible with an indexing table and automatic gun feed.

Castings Stress Relieved by the Trayfull

TO RELIEVE possible internal stresses and to clean off traces of foundry sand and other adhering impurities, all castings, gray iron and malleable, used in the manufacture of the Chevrolet automatic transmission at the company's Cleveland plant are given a special normalizing furnace treatment, followed by a caustic dip.

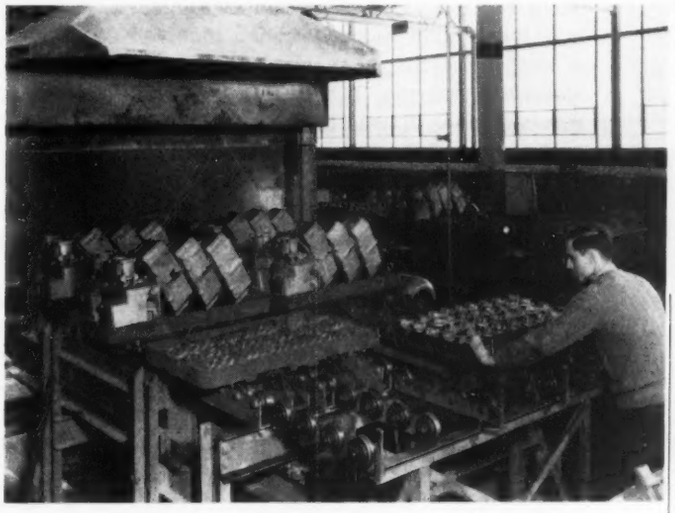
Castings processed vary widely in size and shape, including the transmission bell housing, torque converter housing, transmission case, valve body, low and reverse drums, pump housings and the like.

As received from the Chevrolet Gray Iron Foundry in Saginaw, Mich., the castings first are loaded on



heat resisting trays, each containing castings of one type only. Trays are loaded on a roller wheel conveyor adjoining the normalizing furnace and are then transferred to a similar approach conveyor at the charging end of the furnace. In the furnace, castings are maintained at a temperature of 1250° F by 11 gas burners equispaced on each side of the unit.

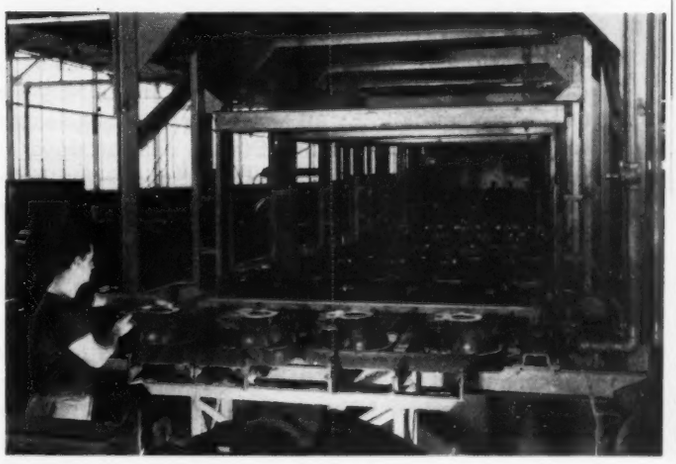
Emerging from the 1½-hour trip through the furnace, the trays are picked up by another chain conveyor and lowered into a Virgo salt bath, held at a temperature of 800° F by electric immersion heaters. They remain in the salt for one minute and 45 seconds during which time metal surfaces are thoroughly cleaned.



Above—Two rows of trays filled with Chevrolet transmission parts here are being moved through the furnace chamber by chain and dogs. Furnace is 5 feet wide and 40 feet long

Left—After salt dip, trays are raised, moved ahead into a water rinse tank, into an acid dip to neutralize any salt remaining on parts, another water rinse and finally an oil dip

Below—As castings come out of the oil dip, they are moved from the trays and placed in tote boxes which move to the start of the machining operations



SEEN AND HEARD IN THE *Machinery Field*

By GUY HUBBARD
Machine Tool Editor

PROBLEM OF REPAIR PARTS: Users of machine tools are inclined to expect the impossible of machine tool builders when it comes to supplying repair parts for machines of ancient vintage. A case came to my attention recently which involved an order for a bull gear for a planer. With the help of my historical records, I helped the builder to identify this machine. It was built between 1865 and 1870.

No automobile owner in his right mind would expect to get snappy repair parts service on a curved-dash Oldsmobile, a "one-lung" Cadillac or two-cylinder "side winding" Buick. However, plenty of machine tool users are disgruntled because parts for equally ancient machine tools are not instantly forthcoming out of stock. As a matter of fact, the builders do a remarkable job of servicing their obsolete models. I believe they do too good a job. Their solicitude for their customers encourages preservation of antiques which belong either in a museum or in a junk yard.

One builder with whom I discussed this situation recently has worked out a system of pricing parts on a sort of hyperbolic curve. He hoped that would make the repair of overage machines so expensive that they would be scrapped instead of repaired. Much to his surprise, many of the parts on the high swing of the hyperbola are being sold. He attributes that to the fact that some companies seem to have "millions for repairs but not one cent for replacements."

The only laws against that sort of industrial management are economic laws. They are peculiar laws in that infraction of them brings on automatic punishment in the shape of dwindling profits, migration of good workers, loss of good customers and eventual death of the company.

STRENGTH THROUGH INDUSTRY: Although it stemmed out of the successful experiments made by Eli Whitney 150 years ago to step up quality and quantity of military small arms, interchangeable manufacturing in the United States has attained its great heights through production of more and better peacetime goods for more people. Machine tool design and tool engineering has developed over the years primarily with that end in view.

Typical of the history of these techniques is the story of a group of factory buildings in Hartford, Conn., built originally about 100 years ago for quantity manufacture of Sharps' breech loading rifles. When the bottom fell out of the military arms business after the Civil War, some of these buildings were occupied by Pratt & Whitney for the manufacture of machine tools.

Another group of buildings was devoted to quantity production of the once-famous Weed sewing machines—Sharps' workmen, Sharps' techniques and Sharps' machines and tools being converted to this peaceful activity. When George and Albert Pope became interested in stepping up production of their highwheeled Columbia bicycles in the late 1870s, they first contracted the work out to the Weed people. They wound up by buying the plant and converting it into one of the biggest bicycle factories in the world. Its later history included Pope-Hartford automobiles and motorcycles.

This saga of American industry finally involved the tooling and original production by Pratt & Whitney of the original models of the now famous aircraft engines which bear the Pratt & Whitney names. This crowning project—as well as the Pratt & Whitney machine tool and tool manufacturing—long since have outgrown the Sharps-Weed-Pope buildings and have been established in huge, modern plants in East and West Hartford, respectively. The manufacturing methods of Christian Sharps, the gunsmith, still prevail, however, in both plants.

Eli Whitney, Christian Sharps, Francis Pratt and Amos Whitney, George and Albert Pope and all the other great characters involved in this industrial saga, hated war. At the same time they bequeathed to us—in the interchangeable system of manufacturing—a war potential even more powerful than atom bombs. Others have been trying to copy our production methods for more than 100 years, but America still is several jumps ahead of them.

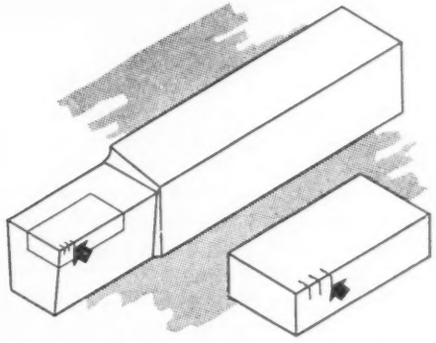
MISDIRECTED BRAIN POWER: In these days of international stress and strain, all of us are aware of eventual possibility of the universal draft of manpower designed to bolster up war industries as well as armed services. Not so many of us are aware that right now ill-timed and serious "raids" are being made by the armed services into vital reservoirs of technical talent and skills.

This situation was driven home to me last week by leading machine tool builders in Rockford, Ill., which is one of our five great machine tool building centers. As in all up-and-coming industrial cities, many young men were placed in key machine and tool engineering positions after World War II, many understudied older men whom they have since succeeded. Many are war veterans and are in the reserves.

Now—more than five years after World War II—these carefully trained specialists in Rockford are being called from vital positions on the industrial front to fill far less important positions in the armed services. This "robbing of Peter to pay Paul" unquestionably is being repeated in many other machinery centers.

The disconcerting thing is that industrial leaders of unquestionable integrity are unable to do much of anything about it. Appeals to high places avail nothing, existing regulations being all in favor of the armed services. It is high time that these regulations be revised.

Which Coolant?



Drawing of a typical cutting tool with arrows showing where checking begins. Bits of metal are forced into these microscopic cracks, causing disintegration of tool. Inset is magnification of the first step in the tool failure

Which cutting fluid to use and how to select it in the first place stumped this Cleveland plant until a formula was developed based on weighing tool wear. Tests show varying amounts of wear are caused by different types of coolants

By LAWRENCE SUHADOLNIK
Process Engineer
Oliver Corp.
Cleveland

WHICH of several hundred cutting fluid brands available is best suited for general all-around machining?"

This question is being asked more and more frequently these days.

The importance of this problem lies in the fact that in recent years spectacular progress has been made by the cutting tool manufacturer. The machine tool manufacturer has accepted the challenge of this development by the design of sturdier, more rigid machine tools with increased horsepower. As a result, speeds and feeds, which only a short time ago were considered impossible and fantastic, are now becoming standard production practice. Cutting fluids, long considered a necessary evil, have become an indispensable part of the science. The cutting oil chemist, long regarded as a charlatan, is now being consulted and even prodded for better products.

Unknown Brings Confusion—It is unfortunate, however, that among the oil compounders there is only a vague agreement on the general components of cutting compounds. A wide difference of opinion exists on "what constitutes the best combination." This confusion probably stems from the fact that so little is known about the mechanics of metals removing.

It is reasonable to expect this diversity of theory to continue until there are more data concerning this phenomenon. In the meantime users have been forced to make some decisions themselves regarding soluble oils since it is practically impossible to get any reasonable tool life without the use of coolants.

One might surmise that because of this universal use of coolants the "right" compounds would have resolved themselves into a select and limited number of grades and brands. Unfortunately, this is not the case. A survey of representative manufacturers, reputedly discriminating users of cutting compounds, would reveal a similar lack of agreement.

Must Rely on Tests—Confronted, therefore, with this state of disagreement, we are left to our own devices in the determination of a cutting compound. The only solution then is to run some tests. These tests must be run in our own plant because there may be some condition in our plant which may dictate the use of a cutting oil not suitable under other conditions. What then are the conditions of the test to be and what answers will we be able to glean from them?

First of all, we must acknowledge the fact that the average machine man is not an accomplished chemist. His knowledge of cutting oils is limited to the old rules of the thumb which are:

For threading and heavy cuts, a sulphur and fat combination; for grinding, a high wetting agent; and emulsified oils for general machining.

For this reason it is best to ignore the chemistry of oils, the physical properties and myriad of conflicting claims.

Problem: Which Brand?—The sole consideration then is to determine which of several brands will give us the desirable tool life compatible with the cost of the compound.

What then are the requisites of a satisfactory coolant?: It must provide tool life; it must not become gummy nor separate when setting unused for short periods of time; it must be bacteriologically inert to prevent skin infections, to control odor and must not contain caustics that cause skin irritation or chafing. Finally, the cost of the oil must be justified by compensating tool life.

As in any test, we must make certain of two things: 1. Uniform conditions exist for each test; 2. the human element is eliminated.

Factors Must Be Constant—In setting up tests for soluble oils all tests should be made on the same part, the same analysis of steel, of similar hardness and at the same feed and speed. The first condition, since it involves purely mechanical procedure, is more or less easily obtained. The second is the more difficult to control.

Usual procedure in tests of this kind is to keep a careful count on the number of pieces produced before a tool must be changed. This practice gives rise to an interesting question in itself: When should a tool be changed?

As a general rule, the higher the machinability rating of a steel the less critical are the rake and clearance angles of the turning tools. Consequently, they can be used even to a point where the tool is actually "pushing" the metal from a part rather than

shearing the metal off.

However, where the cost of the tool bits is considered (especially carbides) it is important that tools be removed at the point where only a small amount of grinding is necessary to restore the tool to its former condition. In most cases this decision is left to the machine operator, who may or may not be qualified to pass unprejudiced judgment. Based on experience, the creditability of this procedure is regarded with considerable suspicion.

Premium Prices Questioned — As must come periodically in the life of every corporation, our company inaugurated a cost reduction program. Because a premium price was being paid for emulsified oil this product came under scrutiny in the economy drive. Several competitive products were brought in and the usual test of counting the number of pieces produced between grinds was entrusted to several competent machine operators.

After several months of testing and compiling test data, the results showed that none of the new products compared to the effectiveness of the original coolant. In spite of the additional cost an overall saving was evident. These test data were so conclusive and impressive that a confident decision was made to continue using the original oil.

At this point someone made the observation that the old and presumably satisfactory product was identified by a characteristic color, which was a trademark with the supplier. The question arose whether color had a psychological effect on the operators and consequently affected results.

To prove this out, a colorless soluble was purchased for the entire plant at about one half the cost of the oil being used. This oil was shipped to a warehouse outside the plant. The drums were opened and dye added. The altered oil was shipped to the plant and the request made that a second series of tests be run.

The Color Wins Out—At the end of the test and to everyone's amazement the results this time compared favorably with the original oil. The results were more remarkable for the fact that the altered oil was one which previously in its uncolored state produced exceedingly poor results.

No inference is made here that the tests were not honest. It is firmly believed that because of their confidence in a product that could be visually identified, operators were inclined to leave cutting tools in a machine longer than they normally would had they been unconvinced as to the effectiveness of a new product.

Results of this sort are primarily responsible for the great differences of opinion regarding cutting oils. It also emphasizes the importance of providing competent supervision in the testing of coolants.

It seems peculiar that management, who insist on specialists in every branch of factory management, are content to leave the decision of selecting coolants to any machine operator who might be available for the job.

Sails Set on New Tack—Therefore, taking full cognizance of these many factors and because it was impractical to set up the laboratory conditions which would have been most desirable, we, at Oliver, made the decision to approach the problem from a new angle.

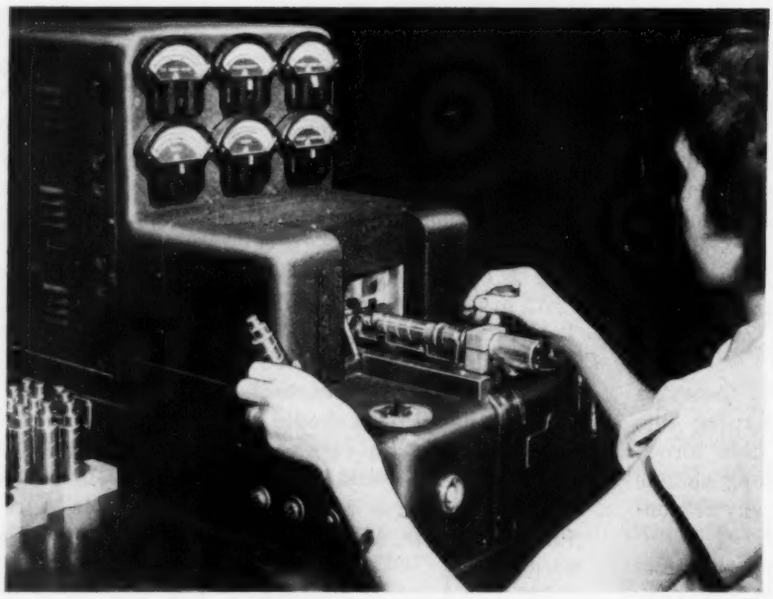
We would measure the effectiveness of an emulsified oil on the reduction of tool wear by determining the loss of weight in a tool after a predetermined number of pieces had been machined.

The following test procedure was established:

A sufficient number of tools to complete a "run" were uniformly ground before each test and weighed to the fraction of a gram; the machine operator was forbidden to touch-up his own tools; at the completion of each test these tools were reground under close supervision. Only minimum of stock was removed to bring the tools back to their former sharpness and then they were reweighed. The difference of the two weights then established the amount of tool wear; all drums containing test oil were coded and the brand name painted over. Colored products were supplied with all dye removed.

Tongue in Cheek—Frankly, the tests were started with a good deal of skepticism. It was doubted that any positive conclusions could be made because tool wear would be infinitesimal and because tools had to be removed before they became so dull that they shattered. It is common knowledge that a short time after microscopic checks become evident along the cutting edge, bits of metal are forced into these cracks, forming a metallic wedge which ultimately causes the tool to disintegrate.

Since there is no point of weighing fractured tools, we made it a point to remove the tools before they completely failed. For example, on one operation we knew that a tool failed somewhere between 400 and 450 pieces. The operator on the test ma-



HIGH-SPEED INSPECTION: Eccentric shaft inspection now is an "armchair" procedure so far as the inspector is concerned. This specially-designed Pratt & Whitney gage checks all critical dimensions of a precision eccentric shaft simultaneously at the rate of 300 parts per hour. Diameter, bearing concentricity, taper and throw of eccentric can be inspected by a semiskilled operator in one operation. Gaging is completely automatic—operator merely places work in the gage cradle and presses a button

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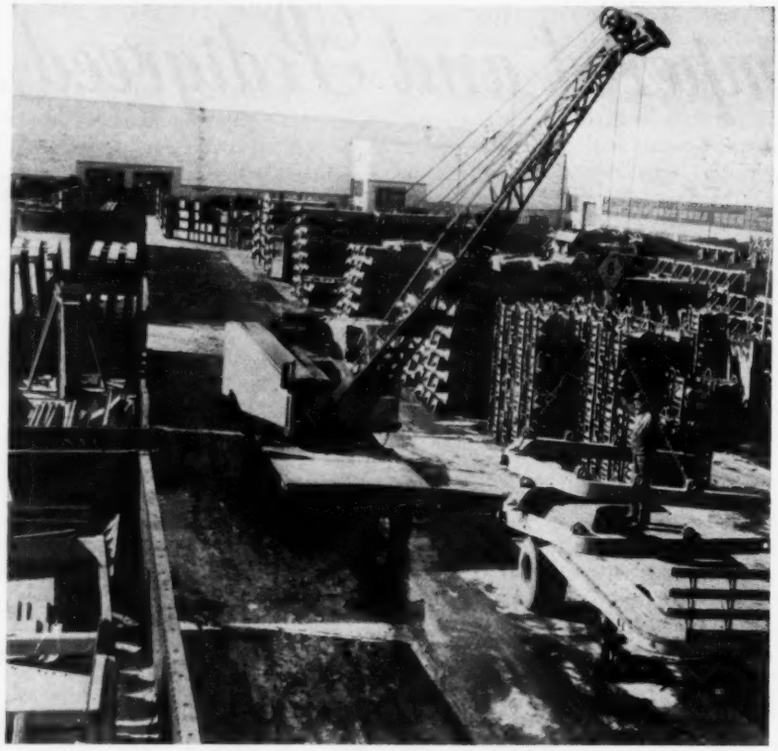


FOUND: ADDITIONAL STORAGE: Expensive inside storage space is no longer tied up at the Peoria, Ill. plant of Caterpillar Tractor Co. since placing this mobile, self-propelled Lorain crane in operation. Its maneuverability in any weather condition helps keep incoming material at an even flow; also enables the company to capitalize on much space within the plant area. As shown, the crane unloads assembly structures for scrapers, dozers and wagons weighing up to 8500 pounds from railroad cars direct to yard stock piles, or onto yard tractors to fill shop orders

chine was instructed to remove the tool when he had turned 300 pieces. By taking this precaution, we were able to measure the amount of tool wear and not the severity of tool disintegration.

Last of Doubting Thomas—However, our doubts were completely dispelled when the complete data was compiled on the first test as follows:

Cutting Oil Brand	Seconds of Tool Life
A	1021.1
B	880
C	720
D	81.3
E	559

Our results were tabulated in "seconds of tool life" because it could be compared to other data compiled by the same standard. "Seconds of tool life" is the amount of time a tool is in operation before it has to be removed. Only the actual cutting time is considered. The following formula was developed for the purpose:

$$\frac{60\ B\ N\ G\ W_t}{F\ R\ L\ (W_1 - W_2)}$$

B—Length of cut
N—Number of parts produced during test
G—Linear measurements of amount of tool ground away each time it is reground
W_t—Weight of new tool
F—Feed
L—Length of new tool
W_1—Weight of tools before test
W_2—Weight of tools after test
R—RPM of Machine

To double check our results several tests were repeated and in no case was the error found to be more than 8 per cent. We were satisfied that our results were sufficiently accurate to make a decision. We felt certain that there is a definite variation in the effectiveness of coolants. The test demonstrated that some oils delayed the initial checking of tools along the cutting edge and as a result gave longer tool life.

The above chart shows that impressive savings are possible by the selection of the right soluble oil. The A brand—an extreme pressure high film strength soluble furnished by Macco Products Inc., Chicago—gave us twice the tool life than brand E. It means that if a tool will last twice as long in a setup, the down time while the tools are removed, reground and reset, will be cut in half. It also means that speed and feed may be increased. These tests also showed that the most costly oils were not necessarily the most effective in our plant.

Determining the effectiveness of cutting oils in the above manner takes the decision of selection from the operator and gives it to the processing department.

Shells Cold Extruded

Cold steel extrusion reduces scrap and produces better product

BY concentrating pressures as high as 100 tons per square inch on a steel billet or slug in specially constructed dies, a hydraulic press installed in the plant of Mullins Mfg. Corp., Warren, O., causes the steel to flow in the cold state around a mandrel. It assumes, first the shape of a shallow heavy-walled cup and through subsequent operations, the approximate shape of a finished artillery shell. Faster production and a substantial saving in cost is expected to result from work performed on the press, manufactured by the Lake Erie Engineering Co., Buffalo, N. Y.

Experimental work with this process and its particular application to shell extrusion has been carried on since the termination of the war in other American plants under Army Ordnance contracts. It is thought that other products with a thick-walled steel cup on a hollow cylinder that may or may not require additional shaping and fairly high physicals in the final end product may be made by the process.

Larger Than German—Initial work to be performed by Mullins on the press will include a pilot lot of projectiles for the 105 mm Howitzer and antiaircraft projectiles for the Navy. These are said to be considerably larger pieces than those believed to have been produced in Germany where the fabricating process originated.

It is hoped that the pilot work will prove engineers' contentions that the steel scrap resulting from the production of 100 million of the 105 mm shells will be reduced from a 1,000,000 tons of scrap resulting from the method employed during World War II to 40,000 tons. Improved accuracy of the shells is also anticipated, due to probable uniformity of weight and concentricity.

Self-Centering Rolls May Revolutionize Material Conveying

"Planer-type" action, a hitherto unused natural force, is an important element in the Lorig roll tested at Carnegie-Illinois for keeping materials centered on run-out tables, feed and guide rolls, gravity conveyors and belt pulleys. Damage to materials and operator risks are minimized

IMPROVED material guiding, reduced detrimental high strip tensions, and elimination of much strip edge damage are some of the advantages realized by Carnegie-Illinois Steel Corp. by use of newly designed self-centering rolls that promise to revolutionize material conveying methods.

The principle of "planer action"—a hitherto unused natural force—was built into working models of the rolls by E. T. Lorig, chief of the organization's senior engineering staff, and is today being used for some of their various steel handling applications.

Fundamentally the Lorig self-centering roll is slightly crowned and cut transversely at the center, both halves being fixed to rotate as a unit. The working surfaces of the two parts are approximately horizontal, Fig. 1, while the axes are at an angle. In this way, the planes, or lines of force in both halves twist evenly toward the center in the direction of movement, conferring a self-centering action on any materials passing over the rolls. Sideguides are unnecessary to keep materials on the conveyor.

Experimentation proved that a crown deviation of as little as 0.001-inch from horizontal is sufficient in a split roll to create the planer action which is the major force of the self-centering roll.

After proving its practicality, the inventor's chief concern was to find the maximum number of applications for his invention. Each idea that appeared to have merit was developed and as the number of models grew, new applications suggested themselves. The types and shapes of the self-centering rolls were varied and tested at low and high speeds until today an amazing array of model equipment has been built and proved successful.

Uses Unlimited—Thus far the rolls have been tested at Carnegie for such applications as runout tables, feed and guide rolls for electrolytic tinning, galvanizing and pickling lines, gravity conveyors, belt pulleys and conveyors and similar applications in the steel industry. It is expected that an almost unlimited number of applications for the development will be found in other industries as well.

As an example of the almost unbelievable performance of the rolls, one of the models is operated by an overhung drive and an overhung takeoff, with a smoothly polished, flat stainless steel belt transmitting the power. The belt remains at dead center on the rolls, despite the fact that it is driving a variable load at high speed.

Force Greater than Gravity—One of the more unusual variations in design is a laminated rubber roll with each of the laminations coned on the same principle as the split-crown roll. A stainless steel belt operating between two of these laminated rolls exhibits the same strong centering action inherent in the original design. In fact, the planar action of any of the rolls exerts a greater force than gravity. The pulley assembly can be mounted vertically and the metal belt pulled down against the lower pulley housings, yet the belt will rise back to center itself on the split pulleys as the assembly is rotated.

Conical rolls split across the center and nested to form a circular conveyor table exhibit such a strong

Fig. 1 (inset)—Lines of force "toe in" to the center of the Lorig roll, as shown by this lucite model. When cut transversely, the working surface of the roll becomes approximately horizontal, and the planer action exerts a centering action on any material passing over the roll

Fig. 2—Defying gravity by a 20-degree uptilt of his circular conveyor model, the inventor demonstrates the strong centering action of the rolls on objects of various sizes, shapes, and weights. The conveyor consists of a nest of split conical rolls individually driven

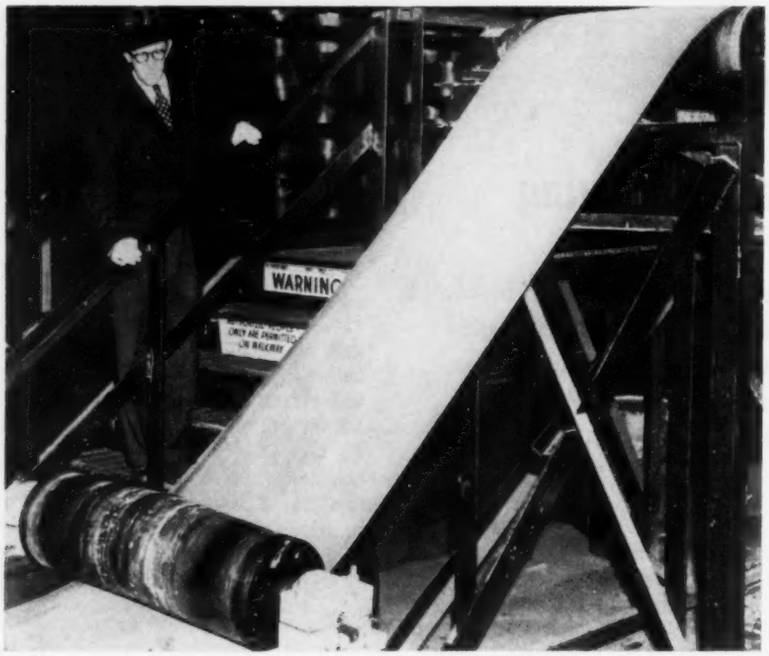


Fig. 3—No side guides are required on this pickling line installed at the McDonald Works of Carnegie-Illinois Steel Corp. The rolls eliminate the need for guides and also make unnecessary the guide looping of material in the pickle bath

centering action that objects of any size or shape (other than spherical) being rotated on the table will not deviate from their lines of travel even when the table is tilted from the horizontal. Note Fig. 2.

Material Damage Eliminated — In its applications in the steel industry, the self-centering roll eliminates the need for table guides and side rails on runout tables and in many other conveyor applications. Hence edge and corner damage to sheets, strip and plates can be virtually eliminated.

Width of conveyor tables and runout tables can be reduced to a bare minimum with no edge or corner damage to the material being conveyed or risk to the operator. Gravity conveyors, whether straight or curved, can be built to operate efficiently with no guide rails. Belt drives are practical and safe, even with an overhung take-off. Operating on self-centering rolls, stainless steel conveyor belts are now practical and safe under low operating tensions.

Several Experiments Underway — Self-centering rolls are now being manufactured at the company's Johnstown Works. Experiments are under way at their Isabella blast furnaces to develop a stainless steel conveyor belt operating on self-centering rolls to handle hot sintered ferromanganese flue dust. A pickling line equipped with self-centering rolls is in operation at their McDonald Works, (Fig. 3) and another installation is operating on a galvanizing line at the Tennessee Coal, Iron & Railroad Co. plant at Fairfield, Ala. Two stainless steel coal conveyor belts are being contemplated for test at the Lynch, Ky. mine of the H. C. Frick Coke Co., and at the Bituminous Research Institute's installation at Huntington, W. Va.

From its initial performance and the possibilities suggested by the many working models, this new principle may well affect the course of material handling through modern industry.

Turbine Blades Are Bimetallic

In an attempt to develop a rapid and economical method of manufacturing compressor stator assemblies, Wellworthy Pistons Ltd. of England is making the blades with aluminum alloy roots for easy machining. The company holds the British license granted by Fairchild Engine & Airplane Corp., Farmingdale, N. Y., for the molecular bonding of aluminum to steel by the Al-Fin process.

Bright drawn steel strip is used for the airfoil section. Applied by the mills to extremely close dimensions, the strip is cropped to length and an aluminum alloy root is bonded to it by the process. Alloy used is selected for its corrosion resistance and strength. Besides the reduced machining cost resulting from a root section that is readily machinable, testing has shown the strength of the bond to be approximately 15,000 psi.

Cost and Weight Savings—Development of compressor stator blade units in segments containing a number of blades or even complete stage rings with blade sections made integral by bonding in of the drawn airfoil strip steel is foreseen. Such construction is expected to result in additional cost and weight advantages.

It has been shown that the bond retains its strength at temperatures at least as high as the 600 to 700° F encountered in compressors. It has also been shown that it is vibration proof and leakproof to hot oil and diatomic gases under high pressures.

New Alloys Developed

Augmenting 80 alloys previously developed by Precision Metalsmiths Inc., Cleveland, are 11 new alloys with specialized properties for the production of small or intricate parts. The company is testing 13 additional alloys.

Four of the 11 new alloys are of the nickel-iron classification, three of these representing specialized magnetic properties. Another is of the nonvariant type which undergoes no changes at differing temperatures. Four were developed at the request of customers.

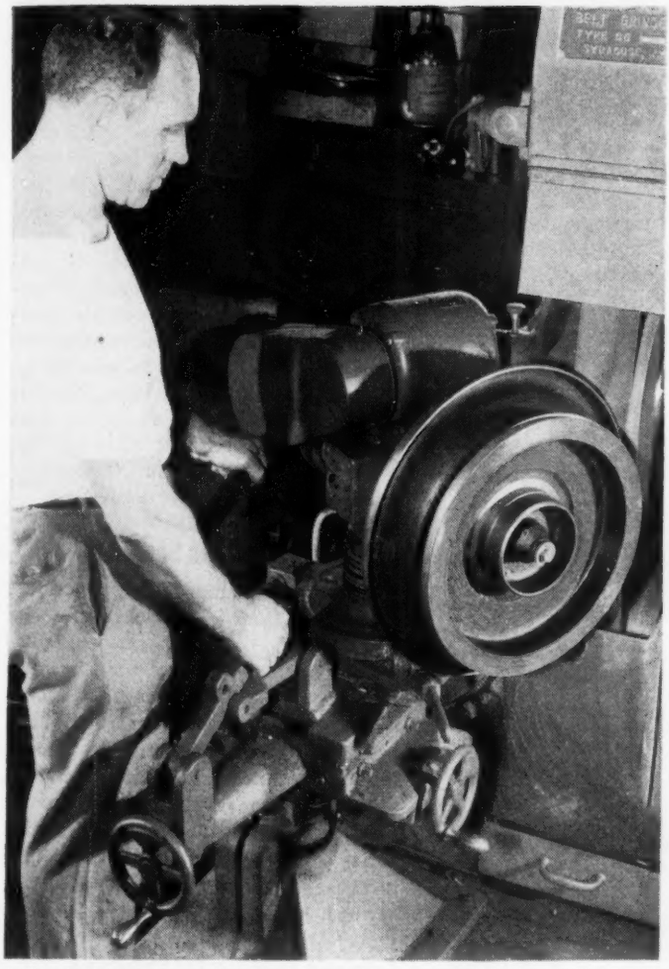
The company is continuing research for the best possible castable alloy with the highest electrical conductivity. According to research conducted so far, the best has proved to be pure aluminum. Securing of materials is said to be a major problem in this field of research, the company being forced to make many inquiries and to locate various metals in the specifications required.

Also under development is a program seeking closer dimensional properties in castings. Many production tests involving temperatures and the resulting behavior of the wax used for patterns, variables of the investment process and methods of casting taking into consideration the metals used, temperatures required and other related conditions occurring during the entire procedure have been investigated.

Stud Welding Explained

Available from Nelson Stud Welding Division, Morton Gregory Corp., Lorain, O., is a 16-page illustrated booklet, a reprint of a chapter on stud welding from the third edition of the *Welding Handbook* issued by American Welding Society. Explained is the stud welding method of fastening and its principal uses. Equipment involved is described and stud locating procedures and other data are given.

"Formed-wheel" belt grinding cuts 3-step job to one!

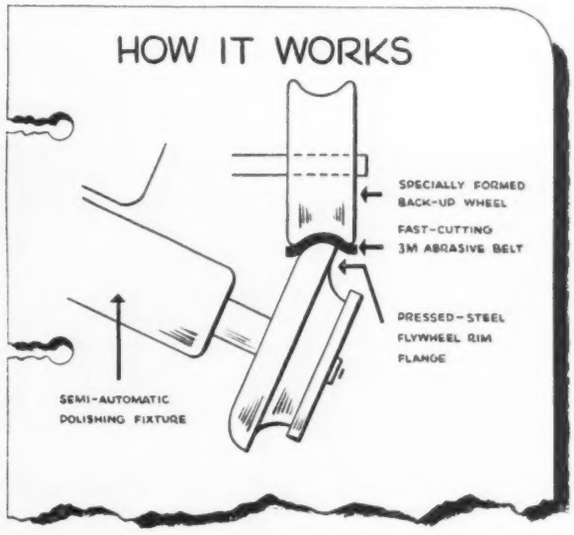


SEMI-AUTOMATIC polishing fixture spins and turns 20" pressed-steel wheel against fast-cutting belt. Savings with 3M Abrasives soon pay for equipment and automatic fixtures. Belt back-up wheel is specially formed to mate with curve of flywheel flange. Formed-wheel belt grinding can cut *your* grinding costs, too!

3M Abrasives slash grinding time 71% at American Type Founders

Time study figures prove it! Formed back-up wheels and 3M Abrasives are saving American Type Founders $1.15 on every "Little Giant" press flywheel they finish. A one-step operation now gives these wheels a smoother, cleaner surface in only 7¼ minutes instead of 25 minutes with the former 3-step method.

Diagram below shows how formed back-up wheel matches the contour of the flywheel rim, gives uniform results, saves 71% on time alone.



You can make savings in time and money on *your* heavy grinding and finishing by consulting one of our experienced Methods Engineers. Just write Dept. S-950 for this service offered at no cost, no obligation.

WE INVITE YOU TO USE OUR DEMONSTRATION ROOMS . . . work out faster, more economical grinding and finishing methods. A 3M Methods Engineer will grind your sample parts on modern belt grinding equipment, show you how to cut costs. For nearest location, address Dept. S-950.

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General Export: Durex Abrasives Corp., New Rochelle, N. Y.
In Canada: Canadian Durex Abrasives Ltd., Brantford, Canada.

Controlled Conveyor Line Speeds Stove Production

SAVINGS in floor space, wider range of conveyor operating speeds, and more dependable, efficient and economical speed control — these are three of the more important cost-reducing results now being secured in the production department of Perfection Stove Co., Cleveland, through the use of an all-electric adjustable-speed drive. Manufactured by Reliance Electric & Engineering Co., Cleveland, this 1-hp motor-drive powers one of Perfection's final assembly lines.

Speed Closely Controlled — Ability to control operating speed of the conveyor line closely and dependably at all times, marks an important manufacturing consideration. Assembly, testing and crating operations are performed in sequence as the stoves are moved on the 175-foot line from the starting point of assembly until they are completed and ready for storage or shipment. Low speeds are essential, especially when production of new models is launched.

Prior to the new drive installation, minimum speed available for the conveyor line was 17 inches per minute. This speed proved too rapid for some of the operations to be performed without jeopardizing quality standards. Now, the same line can be operated at speeds of from 7.75 up to 62 inches per minute.

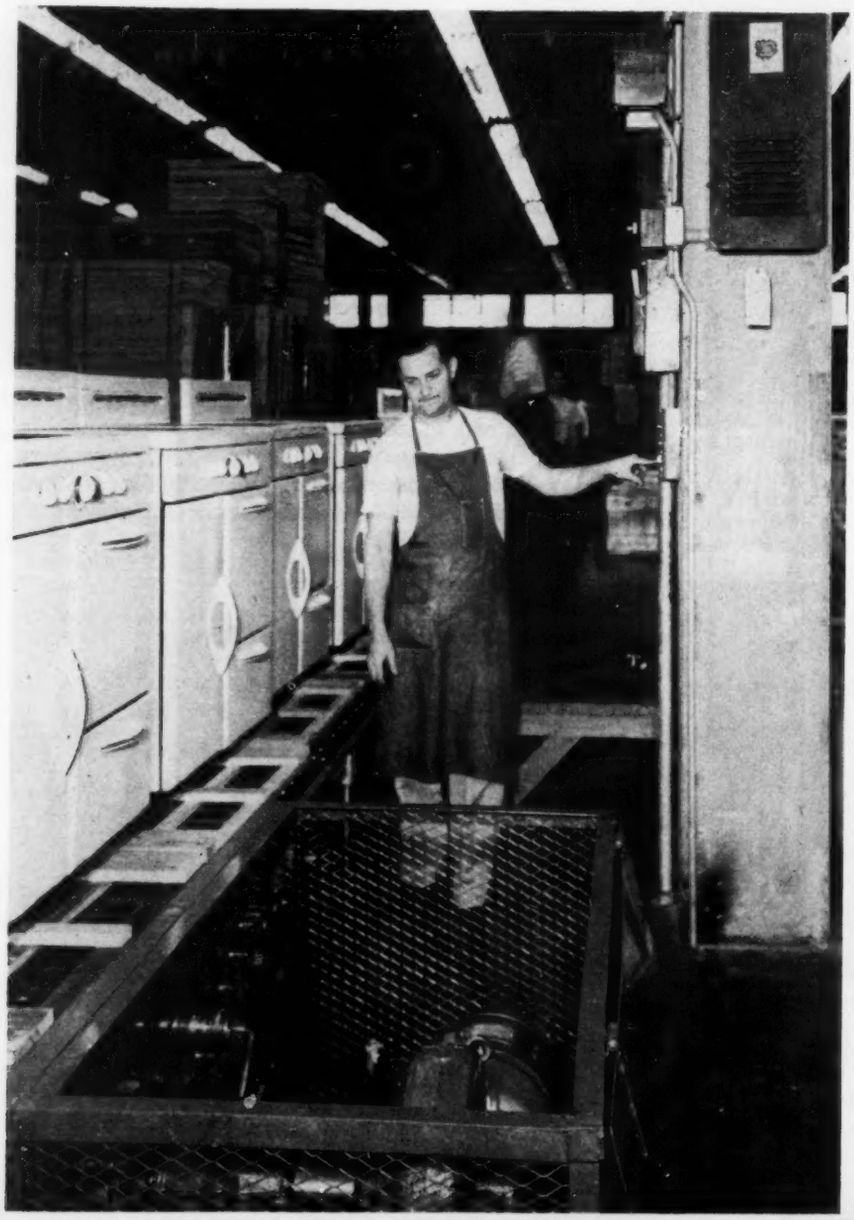
Saves Floor Space—Perfection has gained appreciable economy in floor space. In fact, the drive occupies about 10 sq ft as against 25 sq ft required for the equipment formerly used, a space saving of some 60 per cent.

The speed-control system consists of three basic components:

1. Adjustable speed drive motor, for connection to the driven machine;
2. Operator's control station, furnished in conventional (NEMA No. 1) enclosure;
3. Newly-designed control unit which, providing controlled electronic rectification includes enclosed contactors and overload relays to provide for the desired functions of the drive.

Speed of the drive motor is controlled by varying the armature voltage, providing speeds of infinite number over a wide range of operations. Once the desired speed is selected by the speed adjustment rheostat, the electronic circuits of the drive unit maintain the motor voltage at the level required to obtain the proper revolutions per minute value.

Final gas range assembly line equipped with a Reliance V*S drive. Control unit is mounted on structural column. Drive motor and gear reducer appear in the foreground



Booklet Describes Services

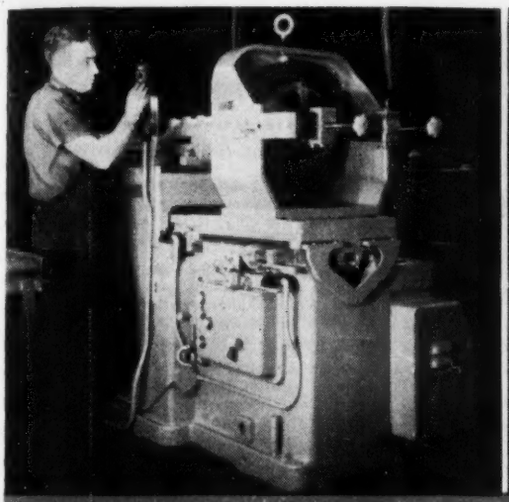
"Proving Ground for Production", a bulletin issued by Behr-Manning, Troy, N. Y., lists the services provided by the company for abrasive research. Sixteen methods and equipment demonstration rooms for pretesting under laboratory, simulated production conditions are provided by the company throughout the country. Some typical case histories of better methods developed in these methods rooms are also described.

Cabinet Testing Established

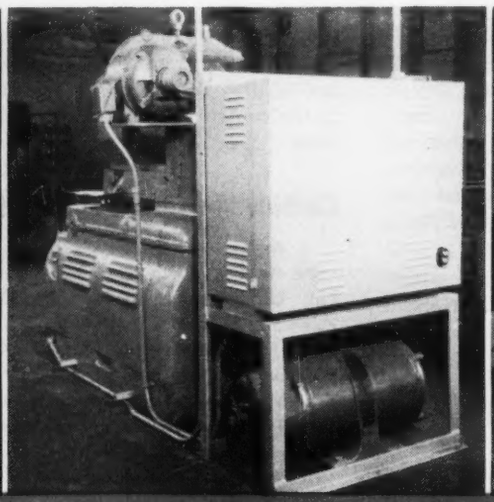
Standardization and simplification committee of the Steel Kitchen Cabinet Institute, Cleveland, has set up a complete set of laboratory testing equipment which will insure uniformity and test procedure. Institute arranges for manufacturers to submit to an independent recognized testing laboratory stock samples of products. Products are being tested by Robert W. Hunt Co. Laboratories, Chicago. Twenty-one tests have been established.

MPA Has New Division

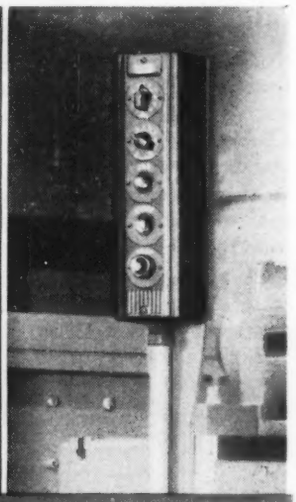
An Electronic Core Division for iron powder electronic core manufacturers has been established by Metal Powder Association, New York. Recognizing the need for developing and promulgating standards for both the manufacturers and users of iron powder cores, the division is working toward this end.



Two separate Speed Selector Controls are used for this automatic 2 cutting speed operating cycle.



Rear view illustrates control equipment and drive motor on top of machine.



The top two small dials provide an extremely wide range of optimum surface cutting speeds. A twist of the finger instantly changes the speed.

Production Has Increased
Machining Quality Is Improved
Accuracy Is Held Closer
Set-Up Time Is Reduced

Since Replacing a Conventional Motor With

Century SELECTIVE SPEED Drive

ON THIS BORING MACHINE

This is just one typical example of the time and labor saving advantages which may be incorporated in new machines — or which may be installed on equipment now in use.

Century SELECTIVE SPEED Drives have been operating as long as 25 years in such places as steel mills, rubber mills, paper mills, wire mills, printing plants and machine shops. These drives are ideal wherever production processes require a wide range of stable speeds.

Ratings are available in sizes from **1 to 150 horsepower.** Speed range of 8 to 1 is standard — up to 32 to 1 is available.

The complete line of Century motors includes wide range of types and kinds from 1/6 to 400 horsepower — single phase, polyphase and direct current.

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Fast Control Installation

Installation of complicated control systems is no longer a long drawn out process. Westinghouse engineers proved this recently when installing a Rototrol control system on the No. 4, five-stand tandem cold reduction mill at the Carnegie-Illinois plant at Gary, Ind.

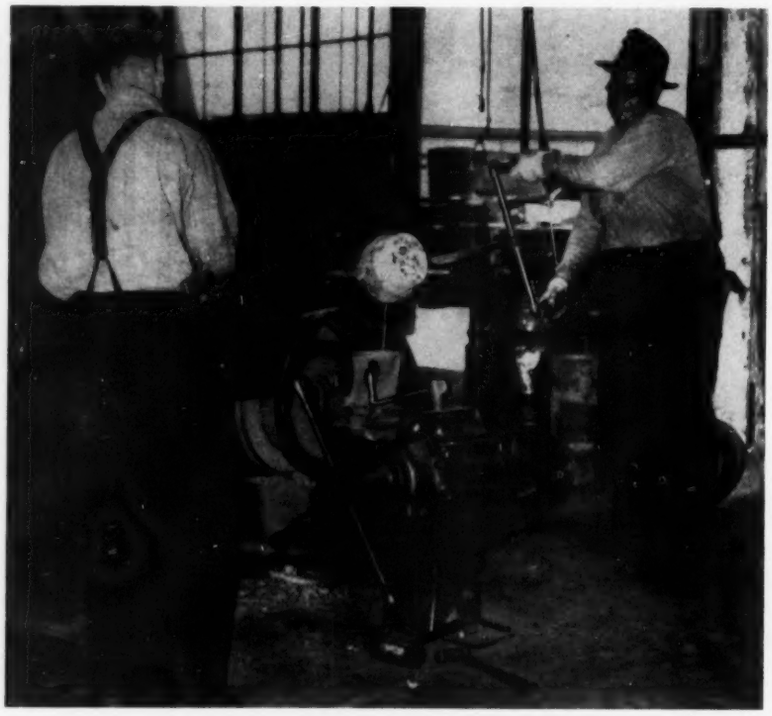
The complicated system which maintains correct proportional speed relationships between the stands was installed so quickly that in a matter of days the mill was in production.

Major portion of the adjustments was made without coupling the motors to the mill, allowing the mill installation to proceed without interruption. Actually, the checking of control sequence, wiring and adjustment of the Rototrol stand and reel control systems were conducted in parallel with the installation of the electrical equipment during the last week of installation.

Two days after the drives were coupled to the mill the unit was placed in production. Since the rolling of the first coil no adjustment of the control system has been necessary.

Carbide Meetings Scheduled

A series of monthly special meetings dealing with cemented carbides has been scheduled by the Detroit Chapter of the American Society of Tool Engineers. Held in addition to regular chapter meetings and under the direction of the chapter's educational committee on carbides, the meetings are as follows: Oct. 5, round table on maintenance of carbide tools; Nov. 2, factors relative to the use of single point carbide tools; Jan. 4, 1951, factors relating to machine tool design, etc.; Feb. 1, high production machining of steel parts; Mar. 1, precision boring and reaming with carbides; Apr. 5, milling with carbides.



"YOU CAN'T SEND ME TO THE BONEYARD" this 31-year-old Warner & Swasey cone drive turret lathe might well be saying to its employer, Federal-Mogul Corp., San Francisco. Converted to a centrifugal casting machine, it is now used for the production of large solid bronze bearings and for lining steel or bronze bearings. Cylindrical molds like the one at the left, or the bearing itself in case of a lining job, are held between flat face plates fixed to the spindle nose and turret slide. Latter plate has a hollow bearing which connects with a filler spout on the slide. With machine up to speed, molten metal is poured into the spout, flowing to the cavity between face plates and thrown against the mold by centrifugal force. Machine base was removed to obtain a better pouring height and part of bedways were chipped away to permit swinging large diameter molds

CALENDAR OF MEETINGS

† *Denotes first listing in this column.*

Oct. 2-6, Gas Appliance Manufacturers Association: Biennial exposition, Convention Hall, Atlantic City, N. J. Association headquarters: 60 E. 42nd St., New York 17.

Oct. 4-6, American Hot Dip Galvanizers Association: Semiannual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va. Association headquarters: 2311 First National Bank Bldg., Pittsburgh 22.

Oct. 5-6, American Foundrymen's Society: Regional conference, Plaza Hotel, San Antonio, Tex. Sponsored by Texas chapter, AFS, with headquarters at 5210 Canal, Houston.

Oct. 9-11, National Academy of Sciences: Autumn meeting, General Electric research laboratory, Schenectady, N. Y. Address of NAS headquarters is 2101 Constitution Ave., Washington 7, D. C.

Oct. 10-12, Society of Industrial Packaging and Materials Handling Engineers: 5th annual industrial packaging and materials handling exposition, Convention Hall, Philadelphia. Society is located at 20 W. Jackson Blvd., Chicago 4.

Oct. 11, American Iron & Steel Institute: Regional technical meeting, Hotel William Penn, Pittsburgh. Address of institute is 350 Fifth Ave., New York 1.

Oct. 11-13, Electrochemical Society: 98th meeting, Hotel Statler, Buffalo, N. Y. Society address: 235 W. 102nd St., New York 25.

Oct. 11-13, American Society of Civil Engineers: Fall meeting, Chicago. Headquarters of society are at 33 W. 39th St., New York 18.

Oct. 12-13, Foundry Equipment Manufacturers' Association: Meeting, Greenbrier Hotel, White Sulphur Springs, W. Va. Association headquarters are in Engineers Bldg., Cleveland 14.

Oct. 12-13, Gray Iron Founders' Society: 22nd annual meeting, Netherland Plaza Hotel, Cincinnati, O. 210 National City-E. Sixth Bldg., Cleveland 14, is location of society.

Oct. 15-17, Conveyor Equipment Manufacturers Association: Meeting, Greenbrier Hotel, White Sulphur Springs, W. Va. Association headquarters are at 1129 Vermont Ave. N. W., Washington 5, D. C.

†**Oct. 16-17, Boston Conference on Distribution,** Hotel Statler, Boston. Sponsored by Boston Chamber of Commerce, 80 Federal St., Boston 10.

†**Oct. 23-25, American Institute of Electrical Engineers-Institute of Radio Engineers:** Conference on electronic instrumentation in nucleonics and medicine, Park Sheraton Hotel, New York. AIEE adress is 33 W. 39 St., New York 18; IRE is 1 E. 79th St., New York 21.

†**Oct. 23-26, American Institute of Steel Construction:** Annual meeting, Shamrock Hotel, Houston, Tex. Institute address is 101 Park Ave., New York 17.

†**Oct. 23-27, American Institute of Electrical Engineers:** Fall general meeting, Oklahoma City, Okla. Institute offices are at 33 W. 39th St., New York 18.

†**Oct. 24-25, Westinghouse materials handling conference,** Hotel Statler, Buffalo, N. Y. For further information write Westinghouse Electric Corp., Box 1017, Pittsburgh 30.

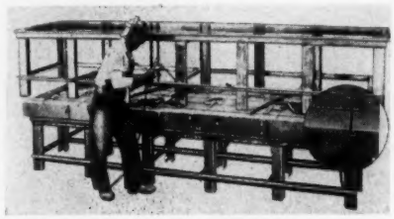
†**Oct. 25, American Iron & Steel Institute:** Regional technical meeting, Hotel Thomas Jefferson, Birmingham, Ala. Institute headquarters: 350 Fifth Ave., New York 1.

†**Oct. 31-Nov. 10, Short course in quality control by statistical methods,** State University of Iowa, Iowa City, Iowa. Further information may be obtained from Lloyd A. Knowler, Co-director, quality control program, the university.

New Products and Equipment

Table Facilitates Welding

Of fine-grain special analysis semi-steel, a table for assembling, locating and welding, built by Challenge Machinery Co., Grand Haven, Mich., is 6 inches thick. It provides a rigid, smooth and perfectly square surface with T-slots. Table is offered with



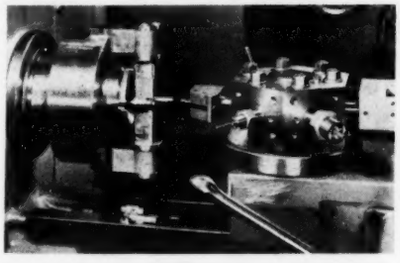
an arc-welded, all-steel stand equipped with lock leveling screws, enabling the plates to be leveled quickly and locked securely.

The number of screws varies from 19 on the 30 x 60-inch table to 59 on the 54 x 144-inch size. Table is also made in a 48 x 96-inch size. On special order, plates will be grooved and keyed so that two or more plates may be assembled and mounted into one complete unit.

Check No. 1 on Reply Card for more Details

Indexing Chuck Introduced

Cycle time may be reduced by as much as 50 per cent with the use of a 10-inch, two-jaw, air-operated indexing chuck made by Warner & Swasey Co., 5701 Carnegie Ave., Cleveland 3, O. Actuated by a floor-type



air valve, the chuck jaws index on an axis parallel with the chuck face through each of four 90-degree positions, while the spindle is turning.

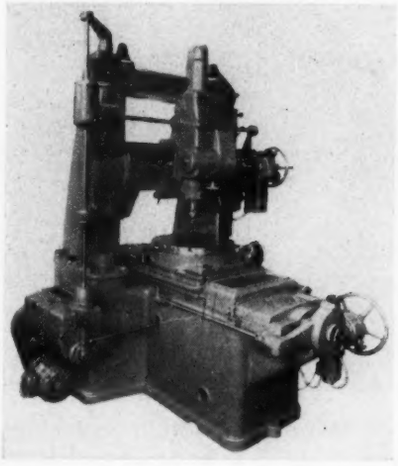
Individual cutting operations performed at successive faces of a hexagon turret may be completed at one setting of the turret on all four limbs of a pipe cross, for example, reducing the number of times the turret is indexed. It is unnecessary to stop the chuck to index the workpiece. Indexing chucks are designed for use with Warner & Swasey electrocycle lathes. Operation is without vibration or chatter.

Check No. 2 on Reply Card for more Details

Larger Capacity Jig Borer

Hauser Machine Tool Corp., 30 Park Ave., Manhasset, N. Y., is offering the type 5 jig borer which is designed for maximum rigidity without excessive weight. All lead screws are precision ground from special stabilized steel, then optically checked for minor pitch errors which are compensated for by corrector bars. Accuracy of slide locations is 0.0002-inch and settings are read to 0.0001-inch on vernier scales.

Maximum boring capacity is 9 inches and vertical travel of boring



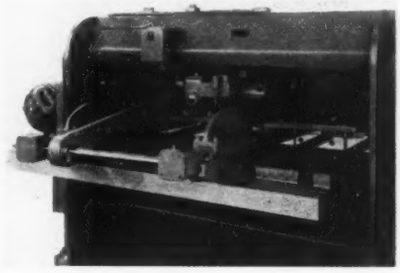
spindle is 9 inches. Individual electric motor drives are provided for table motion, vertical movement of transverse slide and transverse movement of boring head. The 7000-pound machine is made by Henri Hauser, S. A. Bienne, Switzerland.

Check No. 3 on Reply Card for more Details

Keeps Thin Sheets from Sagging

The usually difficult job of gaging light gage sheets that sag so much that they do not strike the gaging angle is considerably simplified by the No-Sag magnetic sheet support, an attachment for all steel shears made by Cincinnati Shaper Co., Hopple, Garrard & Elam Sts., Cincinnati, O. Purpose of the support is to hold up the sheet to be sheared so that it can be pushed against the back gage angle for accurate gaging.

Support is built with permanent Alnico magnets which has a roller arrangement providing easy handling of the sheet when feeding shear. There is no noticeable drag on the sheet due to the magnetic holding. The back pieces will automatically strip off as the piece is cut. When cutting plate the magnets can be raised. Support will handle all magnetic materials up to 16 gage thick-

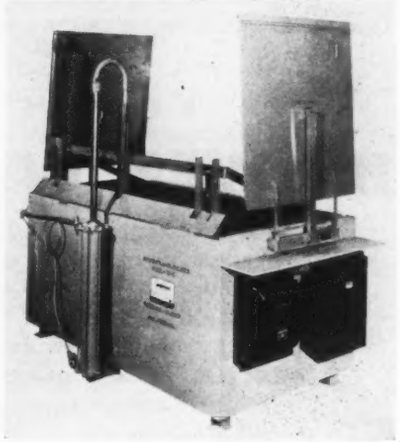


ness and can be supplied with either a 36 or 48-inch back gaging range.

Check No. 4 on Reply Card for more Details

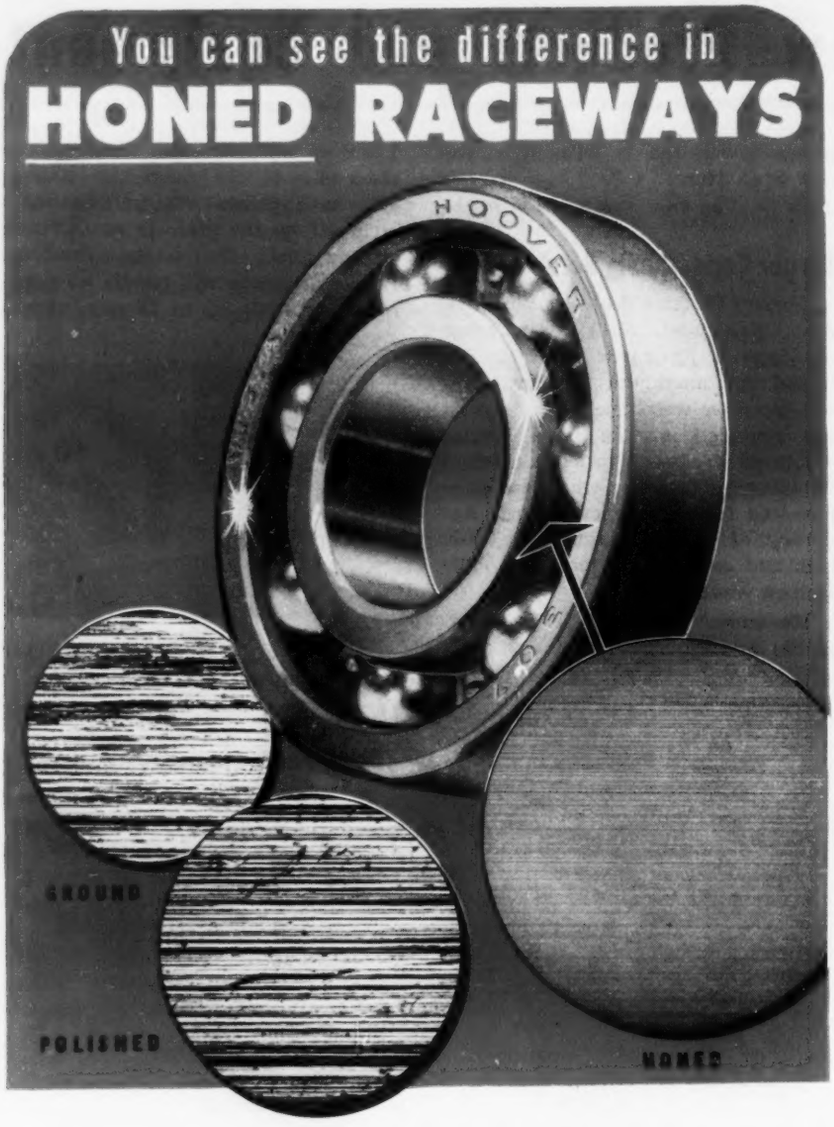
Metal Parts Cleaner

Built for automatic cleaning and dipping of metal parts in rust preventives, oils and grease and dipping of packages in wax is a pneumatic agitating and dipping machine, availabel from D. C. Cooper Co., 1467 S. Michigan Ave., Chicago 5, Ill. Consisting of a steel tank with bottom drain and overflow near top, the ma-



chine is equipped with an air cylinder for operating rack and special valves and switches control the various operations of the rack.

By pushbutton operation, the rack will lower to bottom of tank and automatically start agitating. Another push of the button stops the agitation and raises the rack to the top of the tank for loading and unloading. Machine has a rectangular, removable frame fitting within the inside area of the tank for supporting a platform or basket. Agitation



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HOOVER BALL BEARINGS

The photographs reproduced above are magnified one hundred times so you can see the difference between ground, polished and honed raceways. The process and the special machines for the honing operation are exclusive, patented, Hoover developments. Honing by Hoover goes far beyond grinding and polishing to achieve a surface that assures amazing quietness plus *90 per cent longer bearing life . . . 30 per cent greater load capacity.* That's why Hoover Ball Bearings are the choice of distinguished American manufacturers of fine machines and equipment.

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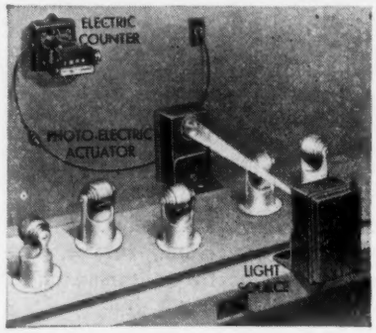
HOOVER BALL and BEARING CO.
Ann Arbor, Michigan

consists of a vertical stroke of about 5 inches, with a speed of 18 to 20 strokes per minute as normal. Speed may be adjusted.

Check No. 5 on Reply Card for more Details

Midget Counter

Variety of counting jobs may be performed by the industrial midget-size photoelectric counting unit, the Counting Eye, made by Autotron Co., Box 722-U, Danville, Ill. Unit includes a photoelectric actuator, light source and an electric counter, all



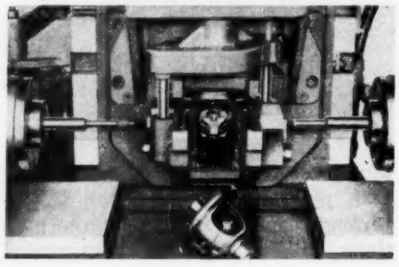
adjusted and available with cords for plug-in connection to lighting outlet.

Actuator and light source are fully enclosed in cast aluminum cases of identical size, measuring 2½ x 3¾ x 5 inches. Adjustable mounting brackets on both actuator and light source provide convenient mounting and alignment adjustment. Operation may be either 115 or 230 v, 60 cycle current.

Check No. 6 on Reply Card for more Details

Rough or Finish Milling Machine

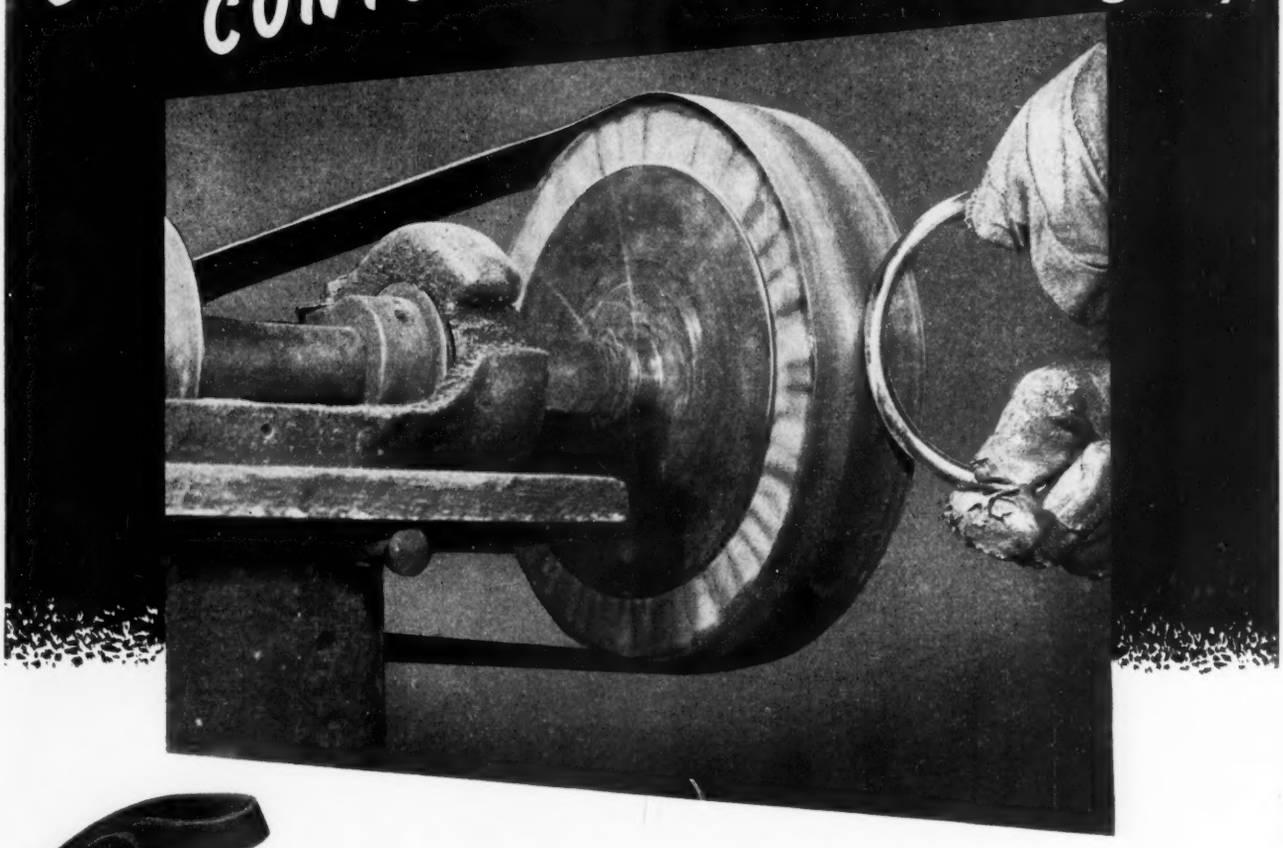
Tool speed is 80 feet per minute, feed 3.5 inches per minute and stroke 4 inches on a special high-speed machine for rough or finish milling of two spherical gear seats inside a differential gear case, built by Snyder Tool & Engineering Co., 3400 E.

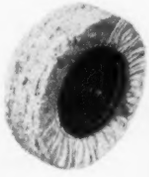


Lafayette, Detroit, Mich. The malleable iron workpiece, when located in the fixture, is automatically clamped and indexed into position for milling on one side and then the other. Cutter is carbide and is held in a yoke on a stationary bracket. Part is loaded over the cutter and driving arbors engage the cutter automatically.

Spindle is powered by a 3 hp mo-

EXTREME CONTOURS... are *easy to finish* the Behr-Manning way!





Contours get a fast, low-cost superior finish with a BEHR-MANNING engineered installation on the job. The properly cushioned surface of a BEHR-MANNING Coated Abrasive Belt, teamed with the right contact wheel and backstand, cuts cool and evenly, leaving the surface free of blending marks, wheel marks, scratches or holidays. Your production rate can be stepped up. Without interrupting your working schedule, our engineers will demonstrate in your plant or in a nearby Methods and Equipment Demonstration Room. Write us about it today

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tor and is driven through belts and helical gears in the head. Coolant is supplied from a separately mounted 42-gallon tank provided with chip tray. Lubrication is entirely automatic. Work cycle is 40 seconds, giving production of 90 pieces an hour at 100 per cent efficiency. Work cycle is fully automatic.

Check No. 7 on Reply Card for more Details

Motor Speed Preset

Available with a mechanical follow-up control for achieving a fixed preset speed is the model ACA motor, made by General Electric Co., Schenectady 5, N. Y. Device enables a predetermined speed to be set manually by a knob either directly on the alternating current adjustable speed motor or at the end of a flexible cable 10 or 15 feet away. Adjustment may be made

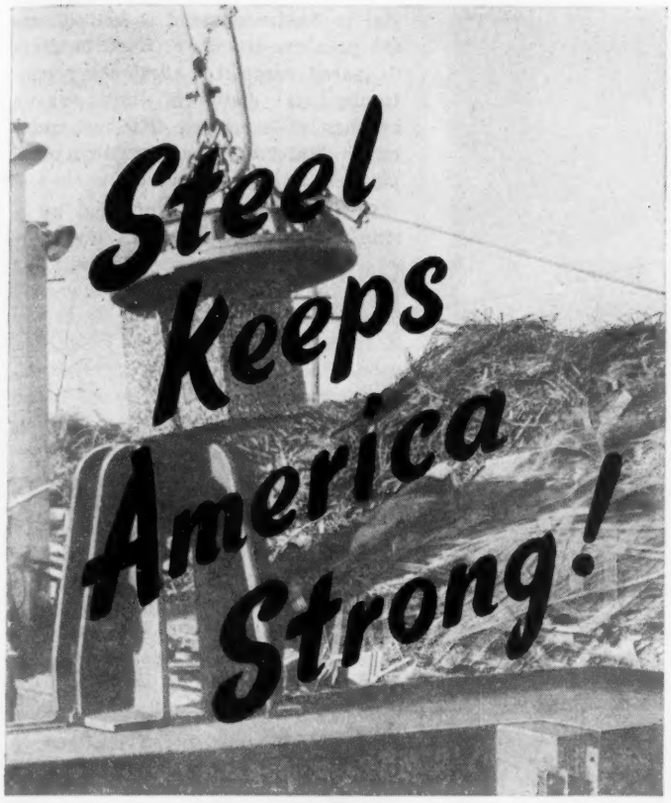
while the motor is at a standstill or while it is running.

Speed control is obtained by rotating brushes around the commutator. Mechanism actuates a pilot motor which drives the brushes to a position corresponding to the setting of the speed adjustment knob. A stop or automatic slow-down returns the brushes to the lowest speed position without disturbing the original setting. When the motor is restarted, the brushes again come back to the preselected speed without operator attention. Accelerating time is dependent upon pilot motor speed.

Check No. 8 on Reply Card for more Details

Pneumatic Bulk Conveyor

Designed for batch moving of sand or other granular, crushed or pulverized materials from receiving to storage and from storage to point of use is a pipe line conveyor called Turbo-Drive, announced by Crane Co., 836 S. Michigan Ave., Chicago, Ill. Operating from air pressure, it consists of an entrance or swing check valve through which the mate-



. . . and Baled Sheet Metal Scrap Helps Keep Steel Production at a High Level

If you are not baling your sheet metal scrap, perhaps you should be . . . not only for the immediate benefit to your own operation . . . but in the interest of a strong industrial economy. More and more steel is needed for its continued strength and growth.

If you question the advisability of baling your sheet metal scrap, competent counsel is available without cost or obligation. Galland-Henning engineers offer you the benefit of many years' experience in all types of scrap metal baling . . . and in the design, construction and installation of powerful, efficient baling equipment which assures lowest possible cost-per-ton.

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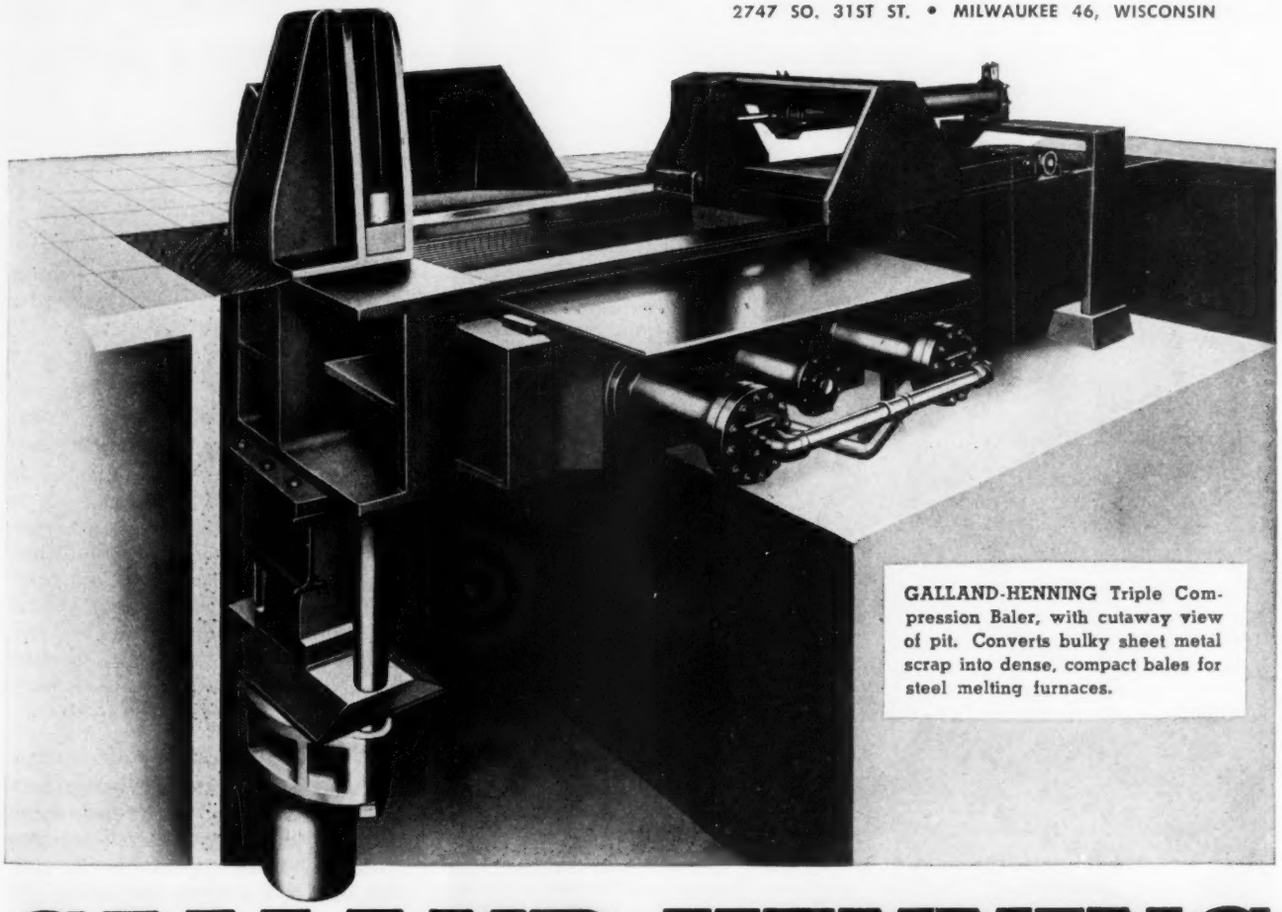
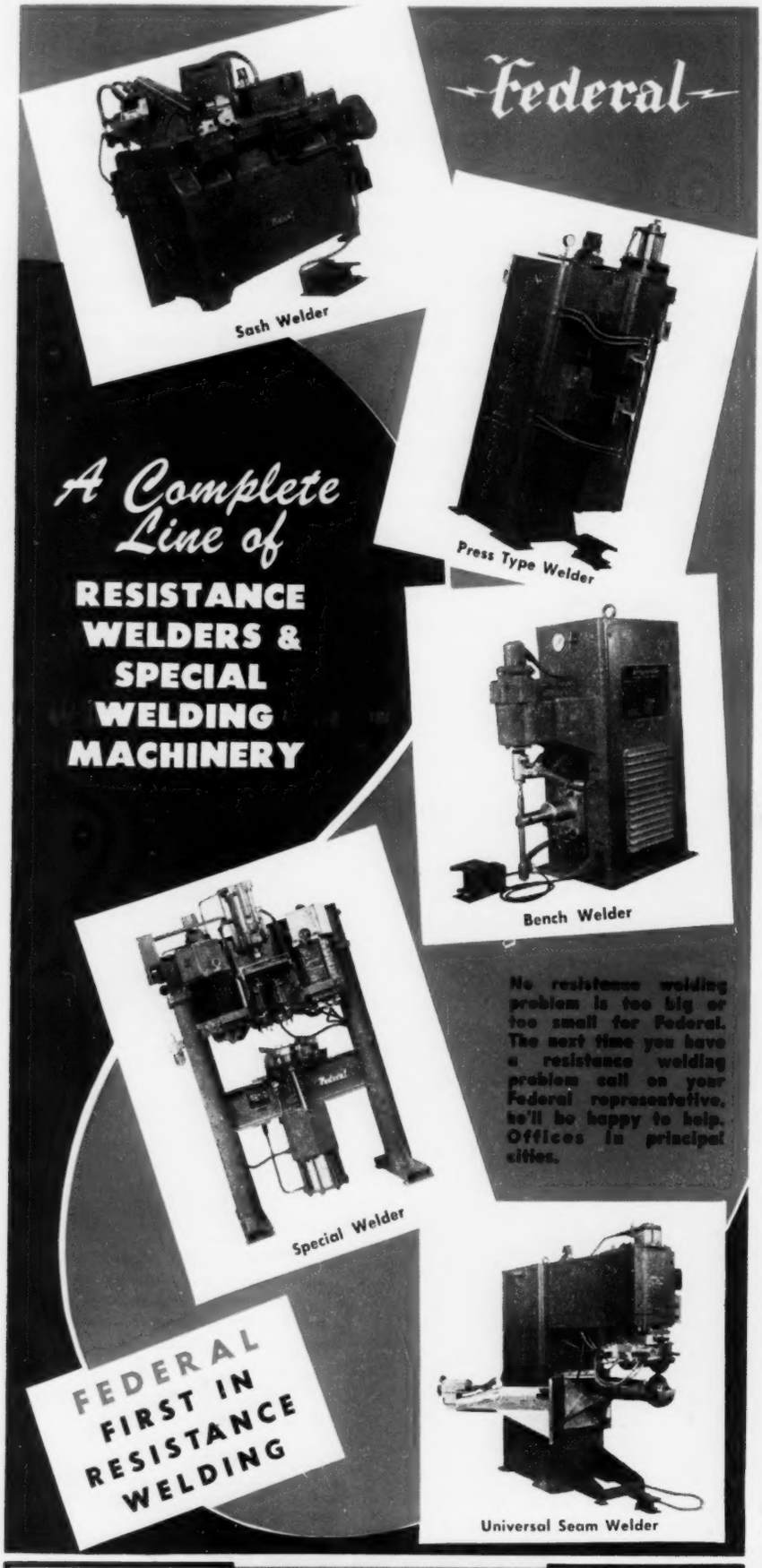


GALLAND-HENNING Triple Compression Baler, with cutaway view of pit. Converts bulky sheet metal scrap into dense, compact bales for steel melting furnaces.

GALLAND-HENNING
SCRAP METAL BALING PRESSES

A 5840-1P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Universal Seam Welder
Federal WELDERS
THE FEDERAL MACHINE & WELDER COMPANY WARREN, OHIO
Warco PRESSES

rial to be transported is loaded into the pressure chamber. Each batch is delivered complete, eliminating contamination between successive batches when moving different materials. Material is enclosed in a steel pipe; it is kept clean.

Entire system is controlled by a single operator located at the storage or mixing source. Dispatch to more than one location is through a transfer switch. Conveyor is offered in three sizes: 7, 15 and 30 cubic feet capacities. Air pressure required depends upon materials, size of batch and distance to be moved.

Check No. 9 on Reply Card for more Details

Lightweight Tractor

Loads as heavy as 10 tons may be towed by a 1510-pound lightweight tractor designed by Automatic Transportation Co., 149 W. 87th St. Chicago, Ill. The battery-operated rider-

type unit can develop ultimate drawbar pull of as much as 1000 pounds.

Frame of the tractor measures 19 inches and at the broadest point is 30 inches wide. Slightly more than its 45-inch length is required for turning. Other features include full magnetic contractor control and padded seat for the operator. Cushion type, solid or pneumatic tires may be used.

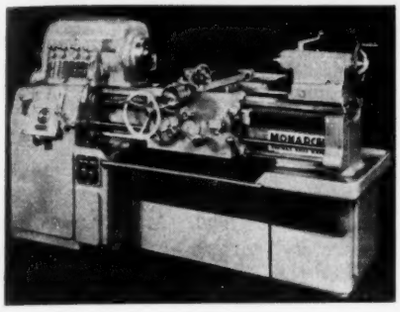
Check No. 10 on Reply Card for more Details

12-Inch Lathe

Available in both engine and toolmaker's models is the 12-inch series 60 lathe, made by Monarch Machine Tool Co., Sidney, O. Both the gear box and end gearing are totally enclosed, permitting automatic pressure lubrication and keeping out foreign matter. Headstock features use of helical gears made of hardened alloy steel with ground or shaved tooth contours. Extra wide gear teeth make

possible more tooth contact at all times.

Shifting from one speed to another is fast and easy, speed changes being made by sliding heavy sided jaw clutches. Gears are always in mesh. Bed ways for both carriage and tail-



stock are flame hardened and precision ground. Headstock, apron, carriage bearing on the ways and compound bottom slide on the carriage are also lubricated by the automatic pressure method. All bearings are of the antifriction type.

Check No. 11 on Reply Card for more Details

Measures Machine Vibrations

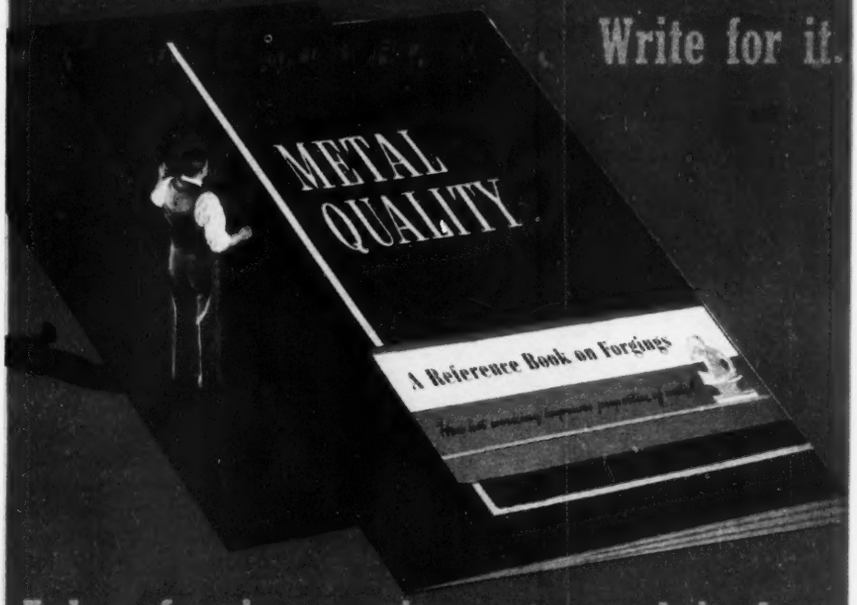
Amplitude of machine vibrations may be measured by the Davey Vibrometer, developed by Vibroscope Co., 6 E. 39th St., New York 16, N. Y. It is applied by holding the hands

against the vibrating machine. Width of oscillation of a light beam on a graduated ground glass scale indicates the vibration amplitude. Two models are available which magnify the vibratory motion 250 and 125 times respectively.

Power is furnished by flashlight batteries housed within the instrument. An 8-inch detachable probe permits measurements to be taken directly on the surface of a rotating

To reduce rejects at the point of assembly, use forgings. *Forgings* offer almost a 100 per cent yield of sound parts because forgings are unusually free of concealed defects. This REFERENCE BOOK on forgings reveals the full significance of all the engineering, production and economic advantages that forgings offer.

Write for it.



Ask a forging engineer to explain how you can obtain the correct combination of mechanical qualities in forgings required for your product.

DROP FORGING ASSOCIATION
605 HANNA BUILDING
CLEVELAND 15, OHIO

Please send 60-page booklet entitled "Metal Quality—How Hot Working Improves Properties of Metal", 1949 Edition.

Name.....

Position.....

Company.....

Address.....

shaft. Probe of the model P instrument is housed in a tube and runs in longitudinal ball bearings to minimize side friction.

Check No. 12 on Reply Card for more Details

Conveyor Moves by Vibration

Ability to discharge from lengths up to 200 feet of pan length is claimed for one unit of the Vibra-Veyor, built by Robins Conveyors Division, Hewitt-Robins Inc., 270 Passaic Ave., Passaic, N. J. Conveyor will handle material that is hot or cold, wet or dry, lump or pulverized, packaged or bulk. Operation is on the principle of constantly balanced forces. It is comprised of a troughed pan made in two sections of about equal length.

A drive unit incorporating eccentrics is mounted in the end of one section with connecting rods to the adjacent end of the other section. Drive unit alternately draws the pan sections together and forces them apart several hundred times per minute, the operational forces being divided equally between the resiliently mounted pans. Operation may be horizontal, downhill or uphill to 10 degrees, depending upon the nature of the material and depth of load. Capacity is limited only by the size of the troughed pan. Installation does not require any special foundation. Unit is available in several widths and up to 200 feet in length for operation on just one vibrator.

Check No. 13 on Reply Card for more Details

• • •

MEASURES STRENGTH: Transverse core tester, introduced by Claud S. Gordon Co., Chicago 16, Ill., consists essentially of a cast-aluminum beam mounted on ball bearings. Loads are applied to the beam by allowing lead shot to drop into a container at the end of the beam. When test specimen fails, supply of shot is automatically stopped.

Check No. 14 on Reply Card for more Details

CENTRIFUGAL CLUTCH: A new centrifugal clutch adaptable for both electric motors and internal combustion engines of ½-hp to 6 hp, is announced by Armstrong Products Co., Milwaukee, Wis. It can be operated in either direction. Unit is available for either direct or indirect drive.

Check No. 15 on Reply Card for more Details

RUBBER CUSHIONED SANDERS: Cone-Loc drum sander, made by American Diamond Saw Sales, Portland, Oreg., is a rubber cushioned sander that is being ground at high speeds and a slight chamfer put in the lips where the drum splits in order to maintain perfect balance at high speeds. It permits use of coated abrasive strips without joining of the ends of belts.

Check No. 16 on Reply Card for more Details

AIR VIBRATORS: Cleveland Vibrator Co., Cleveland, O., has simplified the design of its type F unit. Number of major parts has been reduced to five components: Mounting base plate, housing, spring, piston and head. Assembly is kept intact with four longitudinal body bolts and special stop lock nuts.

Check No. 17 on Reply Card for more Details

UNLOADS FILLER VALVES: Designed to unload either 3179 or 3178 series filler valves when it is necessary that a container be emptied, the new RegO 3119 unloading adapter is offered by Bastian-Blessing Co., Chicago 30, Ill. Plunger travels to two different depths, depending upon which direction the handle is turned.

Check No. 18 on Reply Card for more Details

4000 COUNTS PER MINUTE: Speeds to 4000 counts per minute are provided by the Silver King, a high speed revolution counter, introduced by Production Instrument Co., Chicago 6, Ill. Standard models add one unit for each forward revolution of shaft and subtract reverse revolutions. Models with other ratios are available.

Check No. 19 on Reply Card for more Details

SARAN LINED VALVES: Development of saran line Grinnell-Saunders diaphragm valves for handling corrosive fluids and gases is announced by Dow Chemical Co., Midland, Mich. Special castings designed for the purpose are lined with B-115 saran. Valves are available in sizes 1 to 6 inches with flanged ends.

Check No. 20 on Reply Card for more Details

HEAVY DUTY DRILLS: Link Engineering Co., Detroit 27, Mich., has added heavy duty type S to its line of Ring-Seat center drills. Because of its chord-curve design, with a preformed 60 degree band, followed by an 82 degree flare, there is no sharp angular fatigue point between tip section and center forming section. Drills are available in 13 sizes from 3/64 to 5/16-inch drill diameter.

Check No. 21 on Reply Card for more Details

MULTIPLE FEED OILERS: Automatic solenoid or manual control multiple feed oilers, offered by Trico Fuse Mfg. Co., Milwaukee 12, Wis., deliver a measured quantity of oil to multiple bearing points that require frequent oiling on equipment such as machine tools, punch presses, conveyors, etc. Oil reservoirs are available in Pyrex glass or shatterproof Lucite in 1 pint, 1 quart and 2½ quart capacities.

Check No. 22 on Reply Card for more Details

ANGLE DRESSER: Designated as Mighty Midget, a new angle dresser is announced by Sperman Metal Specialties, Brooklyn 29, N. Y. It relieves the surface grinder operator of the necessity of making makeshifts whenever an angle has to be dressed on a wheel. Angle can be set accurately with a protractor from any of the ground sides or base, or it can be set with a sine bar for special work.

Check No. 23 on Reply Card for more Details

HYDRAULIC ACCUMULATORS: Accumulators, announced by Vickers Inc., Detroit 32, Mich., are designed to supplement operation of any Vickers vane or piston pump in circuits with intermittent high pressure requirement. Units are available in five models with capacities ranging from 75 to 2050 cu in.

Check No. 24 on Reply Card for more Details

ABSORBS SOUND: Soundzorber, a new noise and vibration absorber unit, is announced by Finn & Co., New York 30, N. Y. It is a specially constructed rubber pipe used as a flexible connection between the pump and the pipe line. It is recommended for use wherever liquids are being pumped and pipe line flexibility is required. It is available for pipes from ½ to 14 inches in diameter.

Check No. 25 on Reply Card for more Details

TERMINAL BOARD: Type EB-5 terminal board for switchboards, control apparatus and other similar uses are offered by Switchgear Divisions, General Electric Co., Schenectady 5, N. Y. Board is rated 600 v, 30 amp and is available in four, six, eight and twelve terminal units. Each terminal will accommodate wire sizes AWG 18 to 10 inclusive.

Check No. 26 on Reply Card for more Details

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Market Summary

INFLATIONARY pressures are mounting in the iron and steel markets. Supply shortages are increasing despite record production. Demand is stronger than ever with military and related needs expanding steadily. Prices are moving upward, reflected in continued isolated advances, especially last week's increase of $3 per ton on pig iron by several leading midwestern producers. Meanwhile, continued stability of the finished steel price structure is jeopardized by a possible early hike in steel wages coupled with the continued rise in general production costs.

PRICES—Expectations are the larger steelmakers will await settlement of the wage question before acting on prices. In the meantime, however, smaller producing interests continue to effect increases. Advances were made last week on rail steel bars and reinforcing bars by Pollak Steel Co. and the Texas Steel Co. The increase of $3 per ton on pig iron was effected by Hanna Furnace Corp., Republic Steel Corp. and Youngstown Sheet & Tube Co. Other sellers are expected to take similar action very soon.

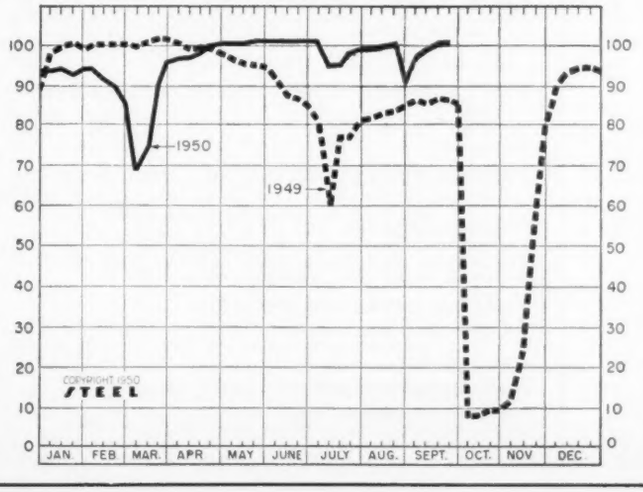
COMPOSITES—With prices generally marking time STEEL's weighted composite on finished steel holds unchanged at 156.99 as does the arithmetical composite at $94.50. Steelmaking scrap composite is off slightly to $40.58 reflecting further stabilization efforts by consumers. The latest advances on pig iron raised the composite on No. 2 foundry to $47.41, that on basic to $46.61, and that on malleable to $48.13.

DEMAND—No easing in tight supply is in early prospect. Actually conditions are expected to worsen over coming months despite government sponsored allocations and inventory controls. These latter mean little in present circumstances since consumers' stocks have not been excessive for months past, and with producers allotting tonnage based on historical pattern of sales there is little possibility of consumer hoarding. Until armament and related requirements are more definitely specified confusion is bound to be experienced in the distribution of steel products. Military demand so far is only moderate, but it will mount steadily from here on cutting more and more into civilian supplies. As a result, it is expected the cry for mandatory government allocations will intensitfy as civilian goods manufacturers run into increasing supply difficulties.

PRODUCTION—The steelmakers are pushing production to the limit of facilities. Wear and tear is idling some equipment for repairs but output is holding above anything previously experienced. Barring serious labor trouble production is certain to hold at or close to capacity for months to come. Sporadic wildcat strikes currently are hampering finished steel output at some plants. Seeking to keep in step with the expanding demand for steel, the industry again has revised upward its expansion plans, its program now calling for increasing present ingot capacity of over 100 million tons to 108 million tons by end of 1952. This is an increase of about 3 million tons over projected construction earlier this year.

OPERATIONS—Last week the national ingot rate held unchanged at 101 per cent of capacity, declines at some points just about offsetting increases at others. The rate advanced 2 points at Pittsburgh to 102 per cent, 2.5 points at Wheeling to 98, ½ point to 99 in Eastern Pennsylvania, 14 points to 93 in New England. Declines were reported in Youngstown, off 1 point to 105, at Cleveland, 1 point to 100, at Cincinnati, 3 points to 103, at St. Louis, 10 points to 81, at Detroit, 4 points to 102 and in the West, ½ point to 103. No changes were reported at Chicago, 103, at Buffalo, 104, and in Birmingham at 100 per cent.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Sept. 23	Change	Same Week 1949	Same Week 1948
Pittsburgh	102	+ 2*	84	93.5
Chicago	103	0*	94.5	96.5
Eastern Pa.	99	+ .5	80	93
Youngstown	105	— 1	94	103
Wheeling	98	+ 2.5	99.5	93.5
Cleveland	100	— 1	100.5	97
Buffalo	104	0	79.5	104
Birmingham	100	0	100	100
New England	93	+14	68	83
Cincinnati	103	— 3	96	102
St. Louis	81	—10	80	91.5
Detroit	102	— 4	104	105
Western	103	— .5	80	..
Estimated national rate	101	0	86	96

Based on weekly steelmaking capacity of 1,906,267 net tons for first half and 1,926,803 second half, 1950; 1,843,516 net tons for 1949; 1,802,476 net tons for 1948. *Change from revised rate.

Composite Market Averages

	Sept. 21 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL INDEX, Weighted:					
Index (1935-39 av.=100)	156.99	156.99	156.99	152.52	101.87
Index in cents per lb. ..	4.253	4.253	4.253	4.132	2.760
ARITHMETICAL PRICE COMPOSITES:					
Finished Steel, NT	$94.50	$94.50	$94.50	$91.55	$58.27
No. 2 Fdry. Pig Iron, GT	47.41	46.85	46.85	46.10	24.67
Basic Pig Iron, GT	46.61	45.97	45.97	45.60	24.00
Malleable Pig Iron, GT..	48.13	47.49	47.49	47.27	25.29
Steelmaking Scrap, GT..	40.58	41.08	42.50	27.08	19.17

Weighted finished steel index based on average shipments and Pittsburgh district prices of the following 14 representative products during 5-year base period 1935-39. Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL, Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points, except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS

	Sept. 21 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh....	3.45	3.45	3.45	3.35	2.25
Bars, H.R., Chicago	3.45	3.45	3.45	3.35	2.25
Bars, H.R., del. Philadelphia	3.93	3.93	3.93	3.83	2.57
Bars, C.F., Pittsburgh	4.10–15	4.10–15	4.10–15	3.95–4.00	2.75
Shapes, Std., Pittsburgh ..	3.40	3.40	3.40	3.25	2.10
Shapes, Std., Chicago	3.40	3.40	3.40	3.25	2.10
Shapes, del. Philadelphia..	3.46	3.46	3.46	3.50	2.215
Plates, Pittsburgh	3.50	3.50	3.50	3.40	2.25
Plates, Chicago	3.50	3.50	3.50	3.40	2.25
Plates, Coatesville, Pa. ...	3.90	3.90	3.90	3.50	2.25
Plates, Sparrows Point, Md.	3.50	3.50	3.50	3.40	2.25
Plates, Claymont, Del. ...	3.90	3.90	3.60	3.50	2.25
Plates, del. Philadelphia ..	3.84	3.84	3.84	3.59	2.30
Sheets, H.R., Pittsburgh..	3.35	3.35	3.35	3.25	2.20
Sheets, H.R., Chicago	3.35	3.35	3.35	3.25	2.20
Sheets, C.R., Pittsburgh ..	4.10	4.10	4.10	4.00	3.05
Sheets, C.R., Chicago	4.10	4.10	4.10	4.00	3.05
Sheets, C.R., Detroit	4.30	4.30	4.30	4.20	3.15
Sheets, Galv., Pittsburgh..	4.40	4.40	4.40	4.40	3.70
Strip, H.R., Pittsburgh ..	3.50	3.50	3.50	3.25	2.10
Strip, H.R., Chicago	3.25	3.25	3.25	3.25	2.10
Strip, C.R., Pittsburgh	4.15–50	4.15–50	4.15–50	4.00	2.80
Strip, C.R., Chicago	4.30	4.30	4.30	4.00–15	2.90
Strip, C.R., Detroit	4.35–95	4.35–95	4.35–95	4.20–25	2.90
Wire, Basic, Pittsburgh ..	4.50	4.50	4.50	4.15	2.75
Nails, Wire, Pittsburgh ...	5.30	5.30	5.30	5.15	2.90
Tin plate, box, Pittsburgh.	$7.50	$7.50	$7.50	$7.75	$5.00

SEMIFINISHED

Billets, forging, Pitts.(NT)	$63.00	$63.00	$63.00	$61.00	$42.00
Sheet bar, mill (NT)	58.00	58.00	58.00	60.00	36.00
Wire rods, $\frac{7}{32}$-$\frac{9}{16}$", Pitts...	3.85	3.85	3.85	3.40	2.15

PIG IRON, Gross Ton

Bessemer, Pitts.	$47-$50	$47-$50	$47-$50	$47.00	$26.19
Basic, Valley	46.00-49.00	46.00	46.00	46.00	24.50
Basic, del. Phila.	50.39	50.39	50.39	49.44	26.34
No. 2 Fdry, Pitts.	49.50	49.50	49.50	46.50	25.69
No. 2 Fdry, Chicago	46.50	46.50	46.50	46.50	25.00
No. 2 Fdry, Valley	46.50-49.50	46.50	46.50	46.50	25.00
No. 2 Fdry, del. Phila. ...	50.89	50.89	50.89	49.94	26.84
No. 2 Fdry, Birm.	42.38	42.38	42.38	39.38	21.38
No. 2 Fdry (Birm.) del. Cin.	49.08	49.08	49.08	45.43	25.30
Malleable, Valley	46.50-49.50	46.50	46.50	46.50	25.00
Malleable, Chicago	46.50	46.50	46.50	46.50	25.00
Charcoal, Lyles, Tenn. ...	60.00	60.00	60.00	66.00	33.00
Ferromanganese, Etna, Pa.	175.00	175.00	175.00	175.00	140.33*

* Delivered, Pittsburgh.

SCRAP, Gross Ton

No. 1 Heavy Melt. Pitts...	$44.00	$44.00	$46.00	$29.75	$20.00
No. 1 Heavy Melt. E. Pa..	37.75	39.25	41.50	25.00	18.75
No. 1 Heavy Melt, Chicago	40.00	40.00	40.00	26.50	18.75
No. 1 Heavy Melt. Valley..	43.75	43.75	46.25	31.25	20.00
No. 1 Heavy Melt. Cleve. .	43.25	43.25	43.25	26.50	19.50
No. 1 Heavy Melt. Buffalo.	41.50	41.50	39.75	28.25	19.25
Rails, Rerolling, Chicago ..	59.50	59.50	56.50	41.50	22.25
No. 1 Cast, Chicago	50.50	49.50	49.50	41.50	20.00

Coke, Net Ton

Beehive, Furn., Connlsvl...	$14.25	$14.25	$14.25	$13.25	$7.50
Beehive, Fdry., Connlsvl...	16.00	16.00	15.50	15.75	8.25
Oven Fdry., Chicago	21.00	21.00	21.00	20.00	13.35

NONFERROUS METALS

Copper, del. Conn...	22.50-24.50	22.50-24.50	22.50-24.50	17.625	12.00
Zinc, E. St. Louis	17.50	17.50	15.00	10.00	8.25
Lead, St. Louis	15.80	15.80	13.80	14.925	6.35
Tin, New York	102.50	103.00	104.00	103.00	52.00
Aluminum, del.	17.50	17.50	17.50	17.00	15.00
Antimony, Laredo, Tex. ..	32.00	32.00	24.50	38.50	14.50
Nickel, refinery, duty paid.	48.00	48.00	48.00	40.00	35.00

Pig Iron

For key to producing companies, turn next page.
Minimum delivered prices do not include 3% federal tax.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem,Pa. B2	$48.00	$48.50	$49.00	$49.50
Brooklyn,N.Y.,del.	....	52.79	53.29	....
Newark,del.	50.63	51.13	51.63	52.13
Philadelphia,del.	50.39	50.89	51.39	51.89
Birmingham District				
AlabamaCity,Ala. R2	41.88	42.38	....	....
Birmingham R2	41.88	42.38	....	....
Birmingham S9	41.88	42.38	....	....
Woodward,Ala. W15	41.88	42.38	....	....
Cincinnati,del.	....	49.08	....	....
Buffalo District				
Buffalo H1, R2	49.00	49.50	50.00	....
Tonawanda,N.Y., W12	46.00	46.50	47.00	....
N.Tonawanda,N.Y., T9	....	46.50	47.00	....
Boston,del.	55.26	55.76	56.20	....
Rochester,N.Y.,del.	48.63	49.13	49.63	....
Syracuse,N.Y.,del.	49.58	50.08	50.58	....
Chicago District				
Chicago I-3	46.00	46.50	46.50	47.00
Gary,Ind. C3	46.00	....	46.50	....
IndianaHarbor,Ind. I-2	46.00	....	46.50	....
So.Chicago,Ill. W14, Y1	46.00	46.50	46.50	....
So.Chicago,Ill. C3	46.00	....	46.50	47.00
Milwaukee,del.	47.89	48.39	48.39	48.89
Muskegon,Mich.,del.	....	51.98	51.98	....
Cleveland District				
Cleveland A7	46.00	46.50	46.50	47.00
Cleveland R2	49.00	49.50	49.50	....
Akron, del. from Cleve.	51.39	51.89	51.89	52.39
Lorain,O. N3	46.00	....	....	47.00
Duluth I-3	....	....	46.50	....
Erie,Pa. I-3	46.00	46.50	46.50	47.00
Everett,Mass. E1	....	50.50	51.00	....
Fontana,Calif. K1	52.00	52.50	....	....
Geneva,Utah G1	46.00	46.50	....	....
Seattle,Tacoma,Wash.,del.	....	54.20	....	....
Portland,Oreg.,del.	....	54.20	....	....
LosAngeles,SanFrancisco,del.	53.70	54.20	....	....
GraniteCity,Ill. M10	47.90	48.40	48.90	....
St.Louis,del. (inc. tax)	48.65	49.15	49.65	....
Ironton,Utah C11	46.00	46.50	....	....
LoneStar,Tex. L6	41.50	*42.00	42.00	....
Minnequa,Colo. C10	47.00	47.50	47.50	....
Pittsburgh District				
NevilleIsland,Pa. P6	....	49.50	49.50	50.00
Pitts.,N.&S. sides, Ambridge, Aliquippa,del.	....	50.69	50.69	51.19
McKeesRocks,del.	....	50.45	50.45	50.95
Lawrenceville,Homestead, McKeesport,Monaca,del.	....	50.94	50.94	51.44
Verona,del.	....	51.40	51.40	51.90
Brackenridge,del.	....	51.63	51.63	52.13
Bessemer,Pa. C3	46.00	....	46.50	47.00
Clairton,Rankin,So.Duquesne,Pa. C3	46.00	....	....	....
McKeesport,Pa. N3	46.00	....	....	47.00
Sharpsville,Pa. S6	....	....	46.50	47.00
Steelton,Pa. B2	48.00	48.50	49.00	49.50
Steubenville,O. W10	46.00	....	....	....
Swedeland,Pa. A3	50.00	50.50	51.00	51.50
Toledo,O. I-3	46.00	46.50	46.50	47.00
Cincinnati,del.	51.01	51.51	....	....
Troy,N.Y., R2	48.00	48.50	49.00	49.50
Youngstown District				
Hubbard,O. Y1	49.00	49.50	49.50	....
Youngstown C3	46.00	....	....	47.00
Youngstown Y1	49.00	49.50	49.50	50.00
Mansfield,O.,del.	50.26	50.76	50.76	51.26

* Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si over base grade, 1.75-2.25%.
Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.
Manganese: Add 50 cents per ton for each 0.50% manganese over 1%, or portion thereof.
Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1.50 for each 0.5% Si to 11.50%)

Jackson,O. G2, J1	$57.00
Buffalo H1	58.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $1 for 0.045% max. P)

NiagaraFalls,N.Y. P15	$78.00
Keokuk,Iowa, Openhearth & Fdry, frt. allowed K2	82.00
Keokuk,Iowa, OH & Fdry., 12½ lb. piglets, frt. allowed K2...	86.00
Wenatchee,Wash., OH & Fdry., frt. allowed K2	82.00

CHARCOAL PIG IRON, Gross Ton

(Low phos. semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles,Tenn. T3	$60.00

LOW PHOSPHOROUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$51.00
Steelton,Pa. B2	54.00
Philadelphia delivered	57.00
Troy,N.Y. R2	54.00

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Semifinished and Finished Steel Products

Mill prices as reported to STEEL Sept. 21, 1950; cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)

Detroit R7 .....$50.00
Fontana,Calif. K1 ....76.00
Munhall,Pa. C3 .....50.00

INGOTS, Alloy (NT)

Detroit R7 .....$51.00
Fontana,Calif. K1 ....77.00
Houston,Tex. S5 .....59.00
Midland,Pa. C18 .....51.00
Munhall,Pa. C3 .....51.00
So.Duquesne,Pa. C3 ..51.00

BILLETS, BLOOMS & Slabs Carbon, Rerolling (NT)

Bessemer,Pa. C3 ....$53.00
Clairton,Pa. C3 .....53.00
Conshohocken,Pa. A3 ..62.00
Ensley,Ala. T2 .....53.00
Fairfield,Ala. T2 .....53.00
Fontana,Calif. K1 ....72.00
Gary,Ind. C3 .....53.00
Johnstown,Pa. B2 ....53.00
Lackawanna,N.Y. B2..53.00
Munhall,Pa. C3 .....53.00
So.Chicago,Ill. C3 ...53.00
So.Duquesne,Pa. C3 ...53.00

Carbon, Forging (NT)

Bessemer,Pa. C3 .....$63.00
Buffalo R2 .....63.00
Canton,O. R2 .....63.00
Clairton,Pa. C3 .....63.00
Cleveland R2 .....63.00
Conshohocken,Pa. A3...68.00
Detroit R7 .....66.00
Ensley,Ala. T2 .....63.00
Fairfield,Ala. T2 .....63.00
Fontana,Calif. K1 ...82.00
Gary,Ind. C3 .....63.00
Geneva,Utah G1 .....63.00
Houston,Tex. S5 .....71.00
Ind.Harbor,Ind. I-2 ...63.00
Johnstown,Pa. B2 ....63.00
Lackawanna,N.Y. B2...63.00
LosAngeles B3 .....82.00
Munhall,Pa. C3 .....63.00
Seattle B3 .....82.00
So.Chicago C3,R2,W14.63.00
So.Duquesne,Pa. C3 ..63.00
So.SanFrancisco B3 ...82.00

Alloy (NT)

Bethlehem,Pa. B2 ....$66.00
Buffalo R2 .....66.00
Canton,O. R2, T7 ....66.00
Conshohocken,Pa. A3..70.00
Detroit R7 .....66.00
Fontana,Calif. K1 ....85.00
Gary,Ind. C3 .....66.00
Houston,Tex. S5 .....74.00
Ind.Harbor,Ind. Y1 ...66.00
Johnstown,Pa. B2 ....66.00
Lackawanna,N.Y. B2..66.00
LosAngeles B3 .....86.00
Massillon,O. R2 .....66.00
Midland,Pa. C18 .....66.00
Munhall,Pa. C3 .....66.00
Sharon,Pa. S3 .....66.00
So.Chicago C3,R2,W14.66.00
So.Duquesne,Pa. C3 ..66.00
Warren,O. C17 .....66.00
Youngstown Y1 .....66.00

ROUNDS, SEAMLESS TUBE (NT)

Canton,O. R2 .....$76.00
Cleveland R2 .....76.00
Fontana,Calif. K1 ....100.00
Gary,Ind. C3 .....76.00
Ind.Harbor,Ind. I-2 ...76.00
Massillon,O. R2 .....76.00
So.Chicago,Ill. R2 ....76.00
So.Duquesne,Pa. C3 ...76.00

SHEETS BARS (NT)

Fontana,Calif. K1 ....$86.00

SKELP

Aliquippa,Pa. J5 .....3.25
Munhall,Pa. C3 .....3.15
Warren,O. R2 .....3.15
Youngstown C3, R2 ....3.15

WIRE RODS

AlabamaCity,Ala. R2 ..3.85
Buffalo W12 .....3.85
Cleveland A7 .....3.85
Donora,Pa. A7 .....3.85
Fairfield,Ala. T2 .....3.85
Fontana,Calif. K1 ....4.60
Houston,Tex. S5 .....4.25
Ind.Harbor,Ind. Y1 ...3.85
Johnstown,Pa. B2 ....3.85
Joliet,Ill. A7 .....3.85
LosAngeles B3 .....4.65
Minnequa,Colo. C10 ....4.10
Monessen,Pa. P7 .....3.85
No.Tonawanda,N.Y. B11.3.85
Pittsburg,Calif. C11 ...4.50
Portsmouth,O. P12 ....3.85
Roebling,N.J. R5 .....3.95
So.Chicago,Ill. R2 .....3.85
SparrowsPoint,Md. B2..3.95
Sterling,Ill.(1) N15 ....3.85
Struthers,O. Y1 .....3.85
Torrance,Calif. C11 ...4.65
Worcester A7 .....4.15

STRUCTURALS

Carbon Steel Stand. Shapes

AlabamaCity,Ala. R2 ..3.40
Aliquippa,Pa. J5 .....3.40
Bessemer,Ala. T2 .....3.40
Bethlehem,Pa. B2 .....3.45
Clairton,Pa. C3 .....3.40
Fairfield,Ala. T2 .....3.40
Fontana,Calif. K1 ....4.00
Gary,Ind. C3 .....3.40
Geneva,Utah G1 .....3.40
Houston,Tex. S5 .....3.80
Ind.Harbor,Ind. I-2 ....3.40
Johnstown,Pa. B2 .....3.45
KansasCity,Mo. S5 ....4.00
Lackawanna,N.Y. B2 ..3.45
LosAngeles B3 .....4.00
Minnequa,Colo. C10 ...3.75
Munhall,Pa. C3 .....3.40
Niles,Calif.(22) P1 ....4.02
Phoenixville,Pa. P4 ...4.25
Portland,Oreg. O4 ....4.05
Seattle B3 .....4.05
So.Chicago,Ill. C3, W14.3.40
So.SanFrancisco B3 ....3.95
Torrance,Calif. C11 ....4.00
Weirton,W.Va. W6 ....3.40

Alloy Stand. Shapes

Clairton,Pa. C3 .....4.05
Fontana,Calif. K1 ....5.25
Munhall,Pa. C3 .....4.05
So.Chicago,Ill. C3 ....4.05

H.S., L.A. Stand. Shapes

Aliquippa,Pa. J5 .....5.15
Bessemer,Ala. T2 .....5.15
Bethlehem,Pa.(14) B2...5.20
Clairton,Pa. C3 .....5.15
Fairfield,Ala. T2 .....5.15
Fontana,Calif. K1 ....5.75
Gary,Ind. C3 .....5.15
Geneva,Utah G1 .....5.10
Ind.Harbor,Ind. I-2, Y1.5.15
Johnstown,Pa. B2 ....5.20
Lackawanna,N.Y.(14)B2 5.20
LosAngeles B3 .....5.75
Munhall,Pa. C3 .....5.15
So.Chicago,Ill. C3 .....5.15
So.SanFrancisco B3 ....5.70
Struthers,O. Y1 .....5.15

Wide Flange

Bethlehem,Pa. B2 .....3.45
Lackawanna,N.Y. B2 ..3.45
Munhall,Pa. C3 .....3.40
So.Chicago,Ill. C3 ....3.40

H.S., L.A. Wide Flange

Bethlehem,Pa. B2 .....5.20
Lackawanna,N.Y. B2 ..5.20
Munhall,Pa. C3 .....5.10
So.Chicago,Ill. C3 .....5.10

SHEET STEEL PILING

Ind.Harbor,Ind. I-2 ....4.20
Lackawanna,N.Y. B2 ..4.20
Munhall,Pa. C3 .....4.20
So.Chicago,Ill. C3 .....4.20
Weirton,W.Va. W6 ....4.20

BEARING PILES

Munhall,Pa. C3 .....3.40
So.Chicago,Ill. C3 .....3.40

PLATES, High-Strength Low-Alloy

Aliquippa,Pa. J5 .....5.35
Bessemer,Ala. T2 ....5.35
Clairton,Pa. C3 .....5.35
Cleveland J5, R2 ....5.35
Conshohocken,Pa. A3 ..5.35
Ecorse,Mich. G5 .....5.60
Fairfield,Ala. T2 .....5.35
Fontana,Calif. K1 ....5.95
Gary,Ind. C3 .....5.35
Geneva,Utah G1 .....5.35
Ind.Harbor,Ind. I-2, Y1.5.35
Johnstown,Pa. B2 .....5.35
Munhall,Pa. C3 .....5.35
Pittsburgh J5 .....5.35
Sharon,Pa. S3 .....5.35
So.Chicago,Ill. C3 ....5.35
SparrowsPoint,Md. B2..5.35
Warren,O. R2 .....5.35
Youngstown Y1 .....5.35

PLATES, Open-Hearth Alloy

Claymont,Del. W16 ....4.50
Coatesville,Pa. L7 ....4.80
Conshohocken,Pa. A3 ...4.55
Fontana,Calif. K1 ....5.40
Gary,Ind. C3 .....4.40
Johnstown,Pa. B2 .....4.40
Munhall,Pa. C3 .....4.40
Sharon,Pa. S3 .....4.40
So.Chicago,Ill. C3 .....4.40
SparrowsPoint,Md. B2 ..4.40

FLOOR PLATES

Cleveland J5 .....4.55
Conshohocken,Pa. A3 ...4.55
Harrisburg,Pa. C5 ....5.25
Ind.Harbor,Ind. I-2 ....4.55
Munhall,Pa. C3 .....4.55
So.Chicago,Ill. C3 ....4.55

PLATES (Universal Mill)

Fontana,Calif. K1 ....4.40

PLATES, Carbon A.R.

Fontana,Calif. K1 ....5.25

PLATES, Carbon Steel

AlabamaCity,Ala. R2 ..3.50
Aliquippa,Pa. J5 .....3.50
Ashland,Ky.(15) A10 ..3.50
Bessemer,Ala. T2 ....3.50
Clairton,Pa. C3 .....3.50
Claymont,Del. W16 ....3.90
Cleveland J5 R2 .....3.50
Coatesville,Pa. L7 ....3.90
Conshohocken,Pa. A3 ..3.75
Ecorse,Mich. G5 .....3.75
Fairfield,Ala. T2 .....3.50
Fontana,Calif. K1 ....4.10
Gary,Ind. C3 .....3.50
Geneva,Utah G1 .....3.50
Harrisburg,Pa. C5 ....4.25
Houston,Tex. S5 .....3.90
Ind.Harbor,Ind. I-2, Y1..3.50
Johnstown,Pa. B2 .....3.50
Lackawanna,N.Y. B2 ..3.50
Minnequa,Colo. C10 ....4.30
Munhall,Pa. C3 .....3.50
Pittsburgh J5 .....3.50
Seattle B3 .....4.40
Sharon,Pa. S3 .....3.50
So.Chicago,Ill. C3, W14.3.50
SparrowsPoint,Md. B2 ..3.50
Steubenville,O. W10 ....3.50
Warren,O. R2 .....3.50
Weirton,W.Va. W6 ....3.50
Youngstown C3, R2, Y1.3.50

PLATES, Wrought Iron

Economy,Pa. B14 ....7.85

PLATES, Ingot Iron

Ashland,c.l.(15) A10 ...3.75
Ashland,lcl(15) A10 ...4.25
Cleveland,cl R2 .....4.10
Warren,O.cl R2 .....4.10

BARS, Hot-Rolled Carbon

AlabamaCity,Ala. R2 ..3.45
Aliquippa,Pa. J5 .....3.45
Alton,Ill(1) L1 .....3.45
Atlanta,Ga. A11 .....3.60
Bessemer,Ala. T2 .....3.45
Buffalo R2 .....3.45
Canton,O. R2 .....3.45
Clairton,Pa. C3 .....3.45
Cleveland R2 .....3.45
Ecorse,Mich. G5 .....3.65
Emeryville,Calif. J7 ....4.20
Fairfield,Ala. T2 .....3.45
Fontana,Calif. K1 ....4.10
Gary,Ind. C3 .....3.45
Houston,Tex. S5 .....3.85
Ind.Harbor,Ind. I-2, Y1.3.45
Johnstown,Pa. B2 .....3.45
KansasCity,Mo. S5 ....4.05
Lackawanna,N.Y. B2 ..3.45
LosAngeles B3 .....4.15
Milton,Pa. B6 .....3.70
Minnequa,Colo. C10 ....3.85
Niles,Calif. P1 .....4.17
N.Tonawanda,N.Y. B11.3.45
Pittsburg,Calif. C11 ....4.15
Pittsburgh J5 .....3.45
Portland,Oreg. O4 ....4.20
Seattle B3, N14 .....4.20
So.Chicago C3, R2, W14.3.45
So.Duquesne,Pa. C3 ....3.45
S.SanFran.,Cal. B3 ....4.20
Struthers,O. Y1 .....3.45
Torrance,Calif. C11 ....4.15
Weirton,W.Va. W6 ....3.45
Youngstown C3, R2 ....3.45

BAR SIZE ANGLES; S. SHAPES

Aliquippa,Pa. J5 .....3.45
Atlanta A11 .....3.60
Johnstown,Pa. B2 .....3.45
Lackawanna,N.Y. B2 ..3.45
Niles,Calif. P1 .....4.17
Pittsburgh(23) J5 ....3.45
Portland,Oreg. O4 ....4.20
SanFrancisco S7 .....4.00
Weirton,W.Va. W6 ....3.45

BAR SIZE ANGLES; H.R.CARBON

Bethlehem,Pa. B2 .....3.65

BARS, Hot-Rolled Alloy

Bethlehem,Pa. B2 .....3.95
Buffalo R2 .....3.95
Canton,O. R2, T7 .....3.95
Clairton,Pa. C3 .....3.95
Ecorse,Mich. G5 .....4.25
Fontana,Calif. K1 ....4.95
Gary,Ind. C3 .....3.95
Houston,Tex. S5 .....4.35
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 .....3.95
KansasCity,Mo. S5 ....4.55
Lackawanna,N.Y. B2 ..3.95
LosAngeles B3 .....5.00
Massillon,O. R2 .....3.95
Midland,Pa. C18 .....3.95
So.Chicago C3, R2, W14.3.95
So.Duquesne,Pa. C3 ...3.95
Struthers,O. Y1 .....3.95
Warren,O. C17 .....3.95
Youngstown C3 .....3.95

BAR SHAPES, Hot-Rolled Alloy

Clairton,Pa. C3 .....4.20
Fontana,Calif. K1 ....4.95
Gary,Ind. C3 .....4.20
Youngstown C3 .....4.20

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy

Aliquippa,Pa. J5 .....5.20
Atlanta A11 .....5.35
Bessemer,Ala. T2 ....5.20
Bethlehem,Pa. B2 ....5.20
Clairton,Pa. C3 .....5.20
Cleveland R2 .....5.20
Ecorse,Mich. G5 .....5.40
Fairfield,Ala. T2 ....5.20
Fontana,Calif. K1 ....6.25
Gary,Ind. C3 .....5.20
Ind.Harbor,Ind. I-2, Y1.5.20
Johnstown,Pa. B2 .....5.20
Lackawanna,N.Y. B2 ..5.20
LosAngeles B3 .....5.90
Pittsburgh J5 .....5.20
So.Duquesne,Pa. C3 ....5.20
So.SanFrancisco B3 ....5.95
Struthers,O. Y1 .....5.20
Youngstown C3 .....5.20

BARS, Cold-Finished Carbon

Aliquippa,Pa. K5 .....4.15
Ambridge,Pa. W18 ....4.15
BeaverFalls,Pa. M12,R2.4.15
Buffalo B5 .....4.15
Camden,N.J. P13 .....4.60
Carnegie,Pa. C12 .....4.15
Chicago W18 .....4.15
Cleveland A7, C20 ....4.15
Detroit P17 .....4.30
Donora,Pa. A7 .....4.15
Ecorse,Mich. G5 .....4.35
Elyria,O. W8 .....4.15
FranklinPark,Ill. N5 ...4.15
Gary,Ind. R2 .....4.15
Hammond,Ind. L2, M13.4.15
Hartford,Conn. R2 ....4.55
Harvey,Ill. B5 .....4.15
LosAngeles R2 .....5.55
Mansfield,Mass. B5 ....4.55
Massillon,O. R2, R8 ....4.15
Midland,Pa. C18 .....4.15
Monaca,Pa. S17 .....4.15
Newark,N.J. W18 .....4.55
Plymouth,Mich. P5 ....4.40
Pittsburgh J5 .....4.10
Putnam,Conn. W18 ....4.55
Readville,Mass. C14 ....4.55
St.Louis,Mo. M5 .....4.55
So.Chicago,Ill. W14 ....4.15
SpringCity,Pa.(5) K3 ...4.55
Struthers,O. Y1 .....4.15
Waukegan,Ill. A7 .....4.15
Youngstown F3, Y1 ....4.15

BARS, Cold-Finished Alloy

Aliquippa,Pa. K5 ....4.90
Ambridge,Pa. W18 ....4.90
BeaverFalls,Pa. M12 ....4.90
Bethlehem,Pa. B2 .....4.90
Buffalo B5 .....4.90
Canton,O. R2, T7 .....4.90
Carnegie,Pa. C12 .....4.90
Chicago W18 .....4.90
Cleveland A7, C20 ....4.90
Detroit P17 .....5.05
Donora,Pa. A7 .....4.90
Elyria,O. W8 .....4.90
Gary,Ind. R2 .....4.90
Hammond,Ind. L2, M13.4.90
Hartford,Conn. R2 .....5.20
Harvey,Ill. B5 .....4.90
Lackawanna,N.Y. B2 ..4.90
Mansfield,Mass. B5 ....5.20
Massillon,O. R2, R8 ...4.90
Midland,Pa. C18 .....4.90
Monaca,Pa. S17 .....4.90
Newark,N.J. W18 .....5.20
Plymouth,Mich. P5 ....5.10
So.Chicago,Ill. R2, W14.4.90
Struthers,O. Y1 .....4.90
Warren,O. C17 .....4.90
Waukegan,Ill. A7 .....4.90
Worcester,Mass. A7 ....5.20
Youngstown F3, Y1 ....4.90

RAIL STEEL BARS

ChicagoHts.(3,4)C2,I-2 .3.45
Dallas,Tex(4) S20 ....6.00
Franklin Pa.(3 4) F5..3.70
FortWorth,Tex.(26) T4 .4.63
Huntingtn,W.Va.(3) W7.4.00
Marion,O(3) P11 .....3.70
Moline,Ill.(3) R2 .....3.55
Williamsport(3) S19 ...4.25

BARS, Wrought Iron

Economy,Pa.(S.R.) B14.8.60
Economy,Pa.(D.R.)B14 11.00
Economy(Staybolt)B14 11.30
Dover,N.J.(Staybolt)U1 15.00
Dover(Eng.Bolt) U1 ..13.50
Dover(Wrgt.Iron) U1 ..12.25
Mck.Rks.(S.R.) L5 ....8.60
McK.Rks.(D.R.) L5 ..11.25
Mck.Rks.(Staybolt) L5.12.75

BARS, Reinforcing (Fabricators)

AlabamaCity,Ala. R2 ...3.45
Alton,Ill.(6) L1 .....3.45
Atlanta A11 .....3.60
Buffalo R2 .....3.45
Cleveland R2 .....3.45
Emeryville,Calif. J7 ...4.20
Fairfield,Ala. T2 .....3.45
Fontana,Calif. K1 ....4.10
Gary,Ind. C3 .....3.45
Houston,Tex. S5 .....3.85
Ind.Harbor,Ind. I-2, Y1.3.45
Johnstown,Pa. B2 ....3.45
KansasCity,Mo. S5 ....4.05
Lackawanna,N.Y. B2 ..3.45
LosAngeles B3 .....4.15
Milton,Pa. B6 .....3.70
Minnequa,Colo. C10 ....4.25
Niles,Calif. P1 .....4.17
Pittsburg,Calif. C11 ..4.15
Pittsburgh J5 .....3.45
Portland,Oreg. O4 .....4.20
SandSprings,Okla. S5 ..4.35
Seattle B3, N14 .....4.20
So.Chicago,Ill. R2 ....3.45
So.Duquesne,Pa. C3 ....3.45
So.SanFrancisco B3 ....4.20
SparrowsPoint,Md. B2 ..3.45
Struthers,O. Y1 .....3.45
Torrance,Calif. C11 ....4.15
Youngstown C3, R2 ....3.45

BARS, Reinforcing

(Fabricated; to Consumers)
Huntington,W.Va. W7 ..4.50
Johnstown, ¼-1" B2 ...4.35
LosAngeles B3 .....5.00
Marion,O. P11 .....4.75
Seattle B3, N14 .....5.10
So.SanFrancisco B3 ....5.00
SparrowsPt., ¼-1" B2 ..4.35
Williamsport,Pa. S19 ..4.35

SHEETS, Hot-Rolled Steel (18 gage and heavier)

AlabamaCity,Ala. R2 ..3.35
Ashland,Ky.(8) A10 ...3.35
Butler,Pa. A10 .....3.35
Cleveland J5, R2 .....3.35
Conshohocken,Pa. A3 ...3.60
Detroit M1 .....4.15
Ecorse,Mich.(8) G5 ....3.55
Fairfield,Ala. T2 .....3.35
Fontana,Calif. K1 ....4.25
Gary,Ind. C3 .....3.35
Geneva,Utah G1 .....3.45
Ind.Harbor,Ind. I-2, Y1.3.35
Irvin,Pa. C3 .....3.35
Lackawanna,N.Y. B2 ..3.35
Munhall,Pa. C3 .....3.35
Pittsburg,Calif. C11 ....4.05
Pittsburgh J5 .....3.35
Sharon,Pa. S3 .....3.50
So.Chicago,Ill. W14 ....3.35
SparrowsPoint,Md. B2 ..3.35
Steubenville,O. W10 ....3.35
Torrance,Calif. C11 ....4.05
Warren,O. R2 .....3.35
Weirton,W.Va. W6 ....3.35
Youngstown C3, Y1 ....3.35

SHEETS, Hot-Rolled Carbon Steel (19 gage and lighter)

AlabamaCity,Ala. R2 ..4.50
Dover,O. R1 .....4.65
Ind.Harbor,Ind. I-2 ....4.40
Mansfield,O. E6 .....4.15
Niles,O. N12 .....4.10
Torrance,Calif. C11 ....5.15

SHEETS, H-R (14 ga., heavier) High-strength Low-Alloy

Cleveland J5, R2 ....5.05
Conshohocken,Pa. A3 ..5.05
Ecorse,Mich. G5 .....5.25
Fairfield,Ala. T2 .....5.05
Fontana,Calif. K1 ....6.74
Gary,Ind. C3 .....5.05
Ind.Harbor,Ind. I-2, Y1.5.05
Irvin,Pa. C3 .....5.05
Lackawanna(35) B2 ..5.05
Pittsburgh J5 .....5.05
Sharon,Pa. S3 .....5.05
So.Chicago,Ill. C3 ....5.05
SparrowsPoint(36) B2 ..5.05
Warren,O. R2 .....5.05
Weirton,W.Va. W6 ....5.05
Youngstown, C3, Y1 ...5.05

SHEETS, Cold-Rolled High-Strength Low-Alloy

Cleveland J5, R2 ....6.20
Ecorse,Mich. G5 .....6.40
Fontana,Calif. K1 ....7.06
Gary,Ind. C3 .....6.20
Ind.Harbor,Ind. I-2, Y1.6.20
Irvin,Pa. C3 .....6.20
Lackawanna(37) B2 ....6.20
Pittsburgh J5 .....6.20
SparrowsPoint(38) B2..6.20
Warren,O. R2 .....6.20
Weirton,W.Va. W6 ....6.20
Youngstown Y1 .....6.20

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.10
Cleveland J5, R2	4.10
Ecorse,Mich. G5	4.30
Fairfield,Ala. T2	4.10
Follansbee,W.Va. F4	5.10
Fontana,Calif. K1	5.00
Gary,Ind. C3	4.10
GraniteCity,Ill. G4	4.30
Ind.Harbor,Ind. I-2, Y1	4.10
Irvin,Pa. C3	4.10
Lackawanna,N.Y. B2	4.10
Middletown,O. A10	4.10
Pittsburg,Calif. C11	5.05
Pittsburgh J5	4.10
SparrowsPoint,Md. B2	4.10
Steubenville,O. W10	4.10
Warren,O. R2	4.10
Weirton,W.Va. W6	4.10
Youngstown Y1	4.10

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	4.40
Ashland,Ky. (8) A10	4.40
Canton,O. R2	4.40
Delphos,O. N16	5.40
Dover,O. R1	4.75
Fairfield,Ala. T2	4.40
Gary,Ind. C3	4.40
GraniteCity,Ill. G4	4.60
Ind.Harbor,Ind. I-2	4.40
Irvin,Pa. C3	4.40
Kokomo, Ind. C16	4.50
MartinsFerry,O. W10	4.40
Niles,O. N12	4.65
Pittsburg,Calif. C11	5.15
SparrowsPoint,Md. B2	4.40
Steubenville,O. W10	4.40
Torrance,Calif. C11	5.15
Weirton,W.Va. W6	4.40

SHEETS, Galvanized No. 10, High-Strength Low Alloy

Irvin,Pa. C3	6.75
SparrowsPoint(39) B2	6.75

SHEETS, Galvannealed Steel

Canton,O. R2	4.95
Irvin,Pa. C3	4.95
Kokomo,Ind. C16	5.05
Niles, O. N12	5.20

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	4.65
Middletown,O. A10	4.65

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.25
Niles,O. R2 (28)	5.25
Weirton,W.Va. W6	5.10

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2	5.05

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va. W10	4.80
Gary,Ind. C3	4.80
Mansfield,O. E6	4.80
Middletown,O. A10	4.80
Niles,O. N12	4.80
Weirton,W.Va. W6	4.80

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.20

ROOFING SHORT TERNES (Package; 8 lb coated)

Gary,Ind. C3	$17.50
Yorkville,O. W10	17.50

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$6.45
Gary,Ind. C3	6.35
Irvin,Pa. C3	6.35
SparrowsPoint,Md. B2	6.45
Yorkville,O. W10	6.35

SHEETS, Lt. Coated Ternes, 6 lb

Yorkville,O. W10	$7.05

SHEETS, Mfg. Ternes, 8 lb

Gary,Ind. C3	$8.10
Warren,O. R2	8.10
Yorkville,O. W10	8.10

BLUED STOCK, 29 Ga.

Yorkville,O. W10	6.00

SHEETS, Culvert	Cu	Cu
No. 16	Alloy	Fe
Ashland A10	5.20	...
Canton,O. R2	5.25	5.70
Fairfield,Ala. T2	5.20	5.45
Gary C3	5.20	5.45
IndianaHarbor I-2	5.20	5.45
Irvin,Pa. C3	5.20	5.45
Kokomo C16	5.40	...
MartinsFy,O. W10	5.20	5.45
Pittsburg,Cal. C11	5.95	...
SparrowsPt. B2	5.20	...
Torrance,Cal. C11	5.95	...

SHEETS, Culvert, No. 16 Corrugated Ingot Iron

Ashland,Ky. A10	5.45
Fairfield,Ala. T2	5.45

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland(8) A10	3.60
Cleveland R2	3.95
Ind.Harbor,Ind. I-2	3.60
Warren,O. R2	3.95

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	4.70
Middletown,O. A10	4.60
Warren,O. R2	4.70

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	4.65
Canton,O. R2	5.15
Ind.Harbor,Ind. I-2	4.80

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	4.90
Middletown,O. A10	4.90

SHEETS, Wrought Iron	An'l	Galv.
Apollo,Pa. B14	12.00	15.50

SHEETS, Drum Body

Pittsburg,Calif. C11	4.05
Torrance,Calif. C11	4.05

SHEETS, ALUMINIZED

Butler,Pa. A10	7.75

SHEETS, Well Casing

Fontana,Calif. K1	4.80

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$6.35	$6.60	$6.85
Fairfield,Ala. T2	6.45	6.70	6.95
Gary,Ind. C3	6.35	6.60	6.85
GraniteCity,Ill. G4	6.55	6.80	7.05
Ind.Harbor,Ind. I-2, Y1	6.35	6.60	6.85
Irvin,Pa. C3	6.35	6.60	6.85
Niles,O. R2	6.35	6.60	6.85
Pittsburg,Calif. C11	7.10	7.35	7.60
SparrowsPoint,Md. B2	6.45	6.70	6.95
Weirton,W.Va. W6	6.35	6.60	6.85
Yorkville,O. W10	6.35	6.60	6.85

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut Lengths ½c lower)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom W10 (cut lengths)	...	...	6.70	7.95	8.75
Brackenridge,Pa. A4	...	...	7.20	8.45	9.25
GraniteCity,Ill. G4(cut lengths)	...	...	6.90	8.15	...
Ind.Harbor,Ind. I-2	6.40	6.70	(34)	...	...
Mansfield,O. E6 (cut lengths)	5.90	6.20	6.70	7.95	8.75
Niles,O. N12 (cut lengths)	...	6.20	6.70	...	...
Vandergrift,Pa. C3	...	6.70	7.20	8.45	9.25
Warren,O. R2	6.40	6.70	7.20	8.45	9.25
Zanesville,O. A10	...	6.70	7.20	8.45	9.25

SHEETS, SILICON (22 Ga. Base) Coils (Cut Lengths ½c lower)

Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	9.30	9.85	10.55	11.35
Brackenridge,Pa. A4	9.80	10.35	11.05	....
Vandergrift,Pa. C3	9.80	10.35	11.05	11.85
Warren,O. R2	9.80	....	....	....
Zanesville,O. A10	9.80	10.35	11.05	11.85

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	14.20	14.70
Vandergrift,Pa. C3	12.35	13.20	14.20	14.70

TIN PLATE, American COKE (Base Box)	1.25 lb	1.50 lb
Aliquippa J5	$7.30	$7.50
Fairfield,Ala. T2	7.40	7.60
Gary C3	7.30	7.50
Ind.Harbor I-2, Y1	7.30	7.50
Irvin,Pa. C3	7.30	7.50
Pitts.Cal. C11	8.05	8.25
Sp.Pt.,Md. B2	7.40	7.60
Warren R2	7.30	7.50
Weirton W6	7.30	7.50
Yorkville,O. W10	7.30	7.50

CANMAKING BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$5.60
Fairfield,Ala. T2	5.70
Gary,Ind. C3	5.60
GraniteCity,Ill. G4	5.80
Ind.Harbor,Ind. I-2, Y1	5.60
Irvin,Pa. C3	5.60
Niles,O. R2	5.60
Pittsburg,Calif. C11	6.35
SparrowsPoint,Md. B2	5.70
Warren,O. R2	5.60
Weirton,W.Va. W6	5.60
Yorkville,O. W10	5.60

HOLLOWARE ENAMELING Black Plate (29 gage)

Aliquippa,Pa. J5	5.30
Follansbee,W.Va. F4	5.30
Gary,Ind. C3	5.30
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. Y1	5.30
Irvin,Pa. C3	5.30
Niles,O. R2	5.30
SparrowsPoint,Md. B2	5.40
Warren,O. R2	5.30
Yorkville,O. W10	5.30

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.40
Cleveland R2	4.40
Ecorse,Mich. G5	4.70
Gary,Ind. C3	4.40
GraniteCity,Ill. G4	4.60
Ind.Harbor,Ind. I-2	4.40
Irvin,Pa. C3	4.40
Middletown,O. A10	4.40
Youngstown Y1	4.40

STRIP, Hot-Rolled, High-Strength Low-Alloy

Atlanta(9) A11	5.10
Bessemer,Ala. T2	4.95
Conshohocken,Pa. A3	4.95
Ecorse,Mich. G5	5.15
Fairfield,Ala. T2	4.95
Fontana,Cal. K1	6.64
Gary,Ind. C3	4.95
Ind.Harb.,Ind. I-2, Y1	4.95
Lackawanna,N.Y. B2	4.95
LosAngeles(25) B3	5.70
Sharon,Pa. S3	4.95
So.SanFrancisco(25) B3	5.70
SparrowsPoint,Md. B2	4.95
Warren,O. R2	4.95
Weirton,W.Va. W6	4.95
Youngstown C3, Y1	4.95

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	5.10
Carnegie,Pa. S18	5.10
Fontana,Calif. K1	6.30
Gary,Ind. C3	5.10
Houston,Tex. S5	5.50
KansasCity,Mo. S5	5.70
NewBritn,Conn.(10) S15	5.10
Sharon,Pa. S3	5.10
Youngstown C3	5.10

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	3.50
Warren,O. R2	3.85

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.25
Alton,Ill.(1) L1	3.25
Ashland,Ky.(8) A10	3.25
Atlanta A11	3.40
Bessemer,Ala. T2	3.25
Bridgeprt,Conn.(10) S15	3.50
Buffalo(27) R2	3.25
Butler,Pa. A10	3.25
Carnegie,Pa. S18	3.50
Conshohocken,Pa. A3	3.50
Detroit M1	4.05
Ecorse,Mich. G5	3.45
Fairfield,Ala. T2	3.25
Fontana,Calif. K1	4.40
Gary,Ind. C3	3.25
Houston,Tex. S5	3.65
Ind.Harbor,Ind. I-2, Y1	3.25
KansasCity,Mo.(9) S5	3.85
Lackawanna,N.Y. B2	3.25
LosAngeles B3	4.00
Milton,Pa. B6	3.50
Minnequa,Colo. C10	4.30
NewBritain(10) S15	3.50
N.Tonawanda,N.Y. B11	3.25
Pittsburg,Calif. C11	4.00
Riverdale,Ill. A1	3.25
SanFrancisco S7	4.00
Seattle B3, N14	4.25
Sharon,Pa. S3	3.50
So.Chicago,Ill. W14	3.25
So.SanFrancisco B3	4.00
SparrowsPoint,Md. B2	3.25
Torrance,Calif. C11	4.00
Warren,O. R2	3.25
Weirton,W.Va. W6	3.25
WestLeechburg,Pa. A4	3.50
Youngstown C3, Y1	3.25

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10) S15	9.50
Carnegie,Pa. S18	9.50
Cleveland A7	9.50
Dover,O. G6	9.50
Fontana,Calif. K1	11.15
Harrison,N.J. C18	9.50
NewBritn.Conn.(10) S15	9.50
Pawtucket,R.I.(11) N8	9.50
Pawtucket,R.I.(12) N8	9.80
Sharon,Pa. S3	9.50
Worcester,Mass. A7	9.80
Youngstown C8	9.50

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	4.75

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Bridgeport,Conn.(10) S15	4.15	5.95	6.55	8.50	10.80
Bristol,Conn. W1	...	...	6.85	8.80	....
Carnegie,Pa. S18	...	5.95	6.55	8.50	10.80
Cleveland A7	4.15	5.95	6.55	8.50	10.80
Dover,O. G6	4.15	5.95	6.55	8.50	10.80
FranklinPark,Ill. T6	4.50	6.10	6.70	8.65	....
Harrison,N.J. C18	...	...	6.85	8.80	11.10
Mattapan,Mass. T6	4.65	6.25	6.85	8.80	11.10
NewBritn.,Conn.(10) S15	4.15	5.95	6.55	8.50	10.80
NewCastle,Pa. B4	4.15	5.95	6.55	8.50	....
NewCastle,Pa. E5	4.50	5.95	6.55	8.50	10.80
NewYork W3	...	6.30	6.90	8.85	11.15
Pawtucket,R.I. N8:					
Cleve-or-Pitts.Base	4.70	5.95	6.55	8.50	10.80
Worcester,Base	4.65	6.25	6.85	8.80	11.10
Sharon,Pa. S3	4.50	5.95	6.55	8.50	10.80
Trenton,N.J. R5	...	6.25	6.85	8.80	11.10
Wallingford,Conn. W2	4.65	6.25	6.85	8.80	11.10
Weirton,W.Va. W6	4.15	5.95	6.55	8.50	10.80
Worcester,Mass. A7	4.45	6.25	6.85	8.80	11.10
Worcester,Mass. T6	4.65	6.25	6.85	8.80	11.10
Youngstown C8	4.15	5.95	6.55	8.50	10.80
Spring Steel (Tempered)					
Trenton,N.J. R5	...	...	9.30	11.25	13.85
Harrison,N.J. C18	...	...	9.30	11.25	13.85

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	4.50
Berea,O. C7	6.60
Bridgeprt,Conn.(10) S15	4.50
Butler,Pa. A10	4.15
Cleveland A7, J5	4.15
Dearborn,Mich. D3	4.75
Detroit D2	4.75
Detroit M1	4.95
Dover,O.(40) G6	4.50
Ecorse,Mich. G5	4.35
Follansbee,W.Va. F4	4.50
Fontana,Calif. K1	5.75
FranklinPark,Ill. T6	4.50
Ind.Harbor,Ind. I-2	4.30
Lackawanna,N.Y. B2	4.15
LosAngeles C1	5.85
Mattapan,Mass. T6	5.00
Middletown, O. A10	4.15
New Britain(10) S15	4.50
NewCastle,Pa. B4	4.50
NewCastle,Pa.(40) E5	4.50
NewHaven,Conn. D2	4.50
NewHaven,Conn. A7	4.65
NewYork W3	5.00
Pawtucket,R.I. R3	5.15
Pawtucket,R.I.(21) N8	5.00
Riverdale,Ill. A1	4.50
Rome,N.Y. R6	4.15
Sharon,Pa. S3	4.50
SparrowsPoint,Md. B2	4.15
Trenton,N.J.(13) R5	5.00
Wallingford,Conn. W2	5.00
Warren,O.(40) T5	4.50
Warren,O. R2	4.15
Weirton,W.Va. W6	4.15
Youngstown C8, (40)	4.50
Youngstown Y1	4.15

STRIP, Cold-Rolled, High-Strength Low-Alloy

Cleveland A7, J5	6.20
Dover,O. G6	6.20
Ecorse,Mich. G5	6.40
Fontana,Calif. K1	6.95
Lackawanna,N.Y. B2	6.40
Sharon,Pa. S3	6.20
SparrowsPoint,Md. B2	6.40
Warren,O. R2	6.20
Weirton,W.Va. W6	6.20
Youngstown Y1	6.20

STRIP, Electro Galvanized

Weirton,W.Va. W6	4.15
Youngstown C8	4.15

Key to Producing Companies

A1	Acme Steel Co.
A3	Alan Wood Steel Co.
A4	Allegheny Ludlum Steel
A7	American Steel & Wire
A8	Anchor Drawn Steel Co.
A9	Angell Nail & Chaplet
A10	Armco Steel Corp.
A11	Atlantic Steel Co.
A13	American Cladmetals Co.
B1	Babcock & Wilcox Tube
B2	Bethlehem Steel Co.
B3	Beth. Pac.Coast Steel
B4	Blair Strip Steel Co.
B5	Bliss & Laughlin Inc.
B6	Boiardi Steel Corp.
B8	Braeburn Alloy Steel
B11	Buffalo Bolt Co.
B14	A. M. Byers Co.
C1	Calif. Cold Rolled Steel
C2	Calumet Steel Div., Borg-Warner Corp.
C3	Carnegie-Illinois Steel
C4	Carpenter Steel Co.
C5	Central Iron & Steel Div. Barium Steel Corp.
C7	Cleve.Cold.Roll.MillsCo.
C8	Cold Metal Products Co.
C9	Colonial Steel Co.
C10	Colorado Fuel & Iron
C11	Columbia Steel Co.
C12	Columbia Steel & Shaft.
C13	Columbia Tool Steel Co.
C14	Compressed Steel Shaft
C16	Continental Steel Corp.
C17	Copperweld Steel Co.
C18	Crucible Steel Co.
C19	Cumberland Steel Co.
C20	Cuyahoga Steel & Wire
D2	Detroit Steel Corp.
D3	Detroit Tube & Steel
D4	Disston & Son, Henry
D6	Driver Harris Co.
D7	Dickson Weatherproof Nail Co.
E1	Eastern Gas&Fuel Assoc.
E2	Eastern Stainless Steel
E4	Electro Metallurgical Co.
E5	Elliott Bros. Steel Co.
E6	Empire Steel Corp.
F2	Firth Sterling Steel
F3	Fitzsimons Steel Co.
F4	Follansbee Steel Corp.
F5	Franklin Steel Div., Borg-Warner Corp.
F6	Fretz-Moon Tube Co.
G1	Geneva Steel Co.
G2	Globe Iron Co.
G3	Globe Steel Tubes Co.
G4	Granite City Steel Co.
G5	Great Lakes Steel Corp.
G6	Greer Steel Co.
H1	Hanna Furnace Corp.
H4	Heppenstall Co.
I-1	Igoe Bros. Inc.
I-2	Inland Steel Co.
I-3	Interlake Iron Corp.
I-4	Ingersoll Steel Div., Borg-Warner Corp.
J1	Jackson Iron & Steel Co.
J3	Jessop Steel Co.
J4	Johnson Steel & Wire Co.
J5	Jones & Laughlin Steel
J6	Joslyn Mfg. & Supply
J7	Judson Steel Corp.
J8	Jersey Shore Steel Co.
K1	Kaiser Steel Corp.
K2	Keokuk Electro-Metals
K3	Keystone Drawn Steel
K4	Keystone Steel & Wire
K5	Kidd Drawn Steel Co.
L1	Laclede Steel Co.
L2	LaSalle Steel Co.
L3	Latrobe Electric Steel
L5	Lockhart Iron & Steel
L6	Lone Star Steel Co.
L7	Lukens Steel Co.

TIGHT COOPERAGE HOOP

Atlanta A11	3.40
Riverdale,Ill. A1	3.40
Sharon,Pa. S3	3.65
Youngstown C3	3.40

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	5.90
Alton,Ill.(1) L1	5.90
Bartonville,Ill.(1) K4	5.90
Buffalo W12	5.90
Cleveland A7	5.90
Donora,Pa. A7	5.90
Duluth A7	5.90
Fostoria,O. S1	5.90
Johnstown,Pa. B2	5.90
LosAngeles B3	6.85
Milbury,Mass.(12) N6	6.20
Monessen,Pa. P7, P16	5.90
Palmer,Mass. W12	6.20
Pittsburg,Calif. C11	6.85
Portsmouth,O. P12	5.90
Roebling,N.J. R5	6.20
So.Chicago,Ill. R2	5.90
SparrowsPoint,Md. B2	6.00
Struthers,O. Y1	5.90
Trenton,N.J. A7	6.20
Waukegan,Ill. A7	5.90
Williamsport,Pa. B2	6.00
Worcester A7,J4,T6,W12	6.20
Worcester,Mass. N6	6.20

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	5.35
Buffalo W12	5.35
Cleveland A7	5.35
Crawfordsville,Ind. M8	5.35
Dover,O. G6	5.35
Fostoria,O. S1	5.50
Kokomo,Ind. C16	5.35
FranklinPark,Ill. T6	5.70
Massillon,O. R8	5.35
Monessen,Pa. P7, P16	5.35
Pawtucket,R.I.(12) N8	6.00
Trenton,N.J. R5	5.65
Worcester A7, T6, W12	5.65

WIRE, Fine and Weaving (8-in. Coils)

Bartonville,Ill.(1) K4	8.45
Buffalo W12	8.45
Chicago W13	8.45
Cleveland A7	8.45
Crawfordsville,Ind. M8	8.45
Fostoria,O. S1	8.45
Johnstown,Pa. B2	8.45
Kokomo,Ind. C16	8.45
Monessen,Pa. P16	8.45
Palmer,Mass. W12	8.75
Portsmouth,O. P12	8.45
Roebling,N.J. R5	8.75
Woukegan,Ill. A7	8.45
Worcester,Mass. A7,T6	8.75

WIRE, Tire Bead

Bartonville,Ill.(1) K4	10.55
Monessen,Pa. P16	10.80
Roebling,N.J. R5	10.80

WIRE, Manufacturers Bright, Low-Carbon

AlabamaCity,Ala. R2	4.50
Aliquippa,Pa. J5	4.50
Atlanta A11	4.60
Alton,Ill.(1) L1	4.50
Bartonville,Ill.(1) K4	4.50
Buffalo W12	4.50
Chicago W13	4.50
Cleveland A7, C20, R2	4.50
Crawfordsville,Ind. M8	4.60
Donora,Pa. A7	4.50
Duluth A7	4.50
Fairfield,Ala. T2	4.50
Fostoria,O.(24) S1	4.85
Houston S5	4.90
Johnstown,Pa. B2	4.50
Joliet,Ill. A7	4.50
KansasCity,Mo. S5	5.10
Kokomo,Ind. C16	4.60
LosAngeles B3	5.45
Minnequa,Colo. C10	4.75
Monessen,Pa. P7	4.50
Newark, 6-Sga. I-1	5.15
No. Tonawanda B11	4.50
Palmer, Mass. W12	4.80
Pittsburg,Calif. C11	5.45
Portsmouth,O. P12	4.50
Rankin,Pa. A7	4.50
So.Chicago,Ill. R2	4.50
So.SanFrancisco C10	5.45
SparrowsPoint,Md. B2	4.60
Sterling,Ill.(1) N15	4.50
Struthers,O. Y1	4.50
Torrance,Calif. C11	5.45
Waukegan,Ill. A7	4.50
Worcester,Mass. A7	4.80
Worcester,Mass. T6	4.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	5.55
Alton,Ill.(1) L1	5.55
Buffalo W12	5.55
Cleveland A7	5.55
Donora,Pa. A7	5.55
Duluth A7	5.55
Johnstown,Pa. B2	5.55
LosAngeles B3	6.50
Monessen,Pa. P7, P16	5.55
NewHaven,Conn. A7	5.85
Palmer,Mass. W12	5.85
Pittsburg,Calif. C11	6.50
Portsmouth,O. P12	5.55
Roebling,N.J. R5	5.85
So.Chicago,Ill. R2	5.55
SparrowsPoint,Md. B2	5.65
Struthers,O. Y1	5.55
Torrance,Calif. C11	6.50
Trenton,N.J. A7	5.85
Waukegan,Ill. A7	5.55
Worcester,Mass. A7	5.85

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	8.15
Monessen,Pa. P16	8.15
Roebling,N.J. R5	8.45
SparrowsPoint,Md. B2	8.25

ROPE WIRE	Mild Plow	Plow	Imp. Plow
Bartonville,Ill. K4	8.05	8.05	8.30
Buffalo W12	8.05	8.05	8.30
Cleveland A7	8.05	8.05	8.30
Donora,Pa. A7	8.05	8.05	8.30
Fostoria,O. S1	8.05	8.05	8.30
Johnstown,Pa. B2	8.05	8.05	8.30
Monessen,Pa. P7, P16	8.05	8.05	8.30
NewHaven,Conn. A7	8.35	8.35	8.60
Palmer,Mass. W12	8.35	8.35	8.60
Portsmouth,O. P12	8.05	8.05	8.30
Roebling,N.J. R5	8.35	8.35	8.60
SparrowsPoint,Md. B2	8.15	8.15	8.40
Struthers,O. Y1	8.05	8.05	8.30
Trenton,N.J. A7	8.35	8.35	8.60
Waukegan,Ill. A7	8.05	8.05	8.30
Williamsport,Pa. B2	8.15	8.15	8.40
Worcester,Mass. J4, T6	8.35	8.35	8.60

WIRE, Merchant Quality

(6 to 8 gage)	An'ld	Galv.
AlabamaCity R2	5.35	5.60
Aliquippa J5	5.35	5.60
Atlanta A11	5.45	5.70
Bartonville(19) K4	5.35	5.60
Buffalo(31) W12	4.50	...
Cleveland A7	5.35	5.60
Crawfordsvil. M8	5.45	5.70
Donora A7	5.35	5.60
Duluth A7	5.35	5.60
Fairfield T2	5.35	5.60
Houston,Tex. S5	5.75	6.00
Johnstown B2	5.35	5.60
Joliet,Ill. A7	5.35	5.60
KansasCy,Mo. S5	5.95	6.20
Kokomo C16	5.45	5.70
LosAngeles B3	6.30	...
Minnequa C10	5.60	5.85
Monessen P7	5.35	5.60
Palmer(31) W12	4.80	...
Pitts.,Cal. C11	6.30	6.55
Prtsmth.(18) P12	5.35	5.60
Rankin A7	5.35	5.60
So.Chicago R2	5.35	5.60
So.S.Fran. C10	6.30	6.55
SparrowsPt. B2	5.45	5.70
Sterling,Ill.(1)N15	5.35	5.60
Struthers,O. Y1	5.35	5.60
Torrance,Cal. C11	6.30	...
Worcester A7	5.65	5.90

WIRE (16 gage)

	Stone	Stone
Aliquippa J5	9.80	11.30
Bartonville(1) K4	9.80	11.30
Cleveland A7	9.80	11.30
Crawfrdvil. M8	9.80	11.30
Fostoria,O. S1	9.90	11.40
Johnstown B2	9.80	11.30
Kokomo C16	9.80	11.30
Minnequa C10	10.05	11.80
Palmer,Mass. W12	9.80	11.30
Pitts.,Cal. C11	10.15	11.65
Prtsmth.(18) P12	9.80	11.30
SparrowsPt. B2	9.90	11.40
Waukegan A7	9.80	11.30

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	126
Aliquippa,Pa. J5	126
Atlanta A11	128
Bartonville,Ill. K4	126
Crawfordsville M8	128
Donora,Pa. A7	126
Duluth,Minn. A7	126
Fairfield,Ala. T2	126
Houston,Tex. S5	134
Johnstown,Pa. B2	126
Joliet,Ill. A7	126
KansasCity,Mo. S5	138
Kokomo,Ind. C16	128
Minnequa,Colo. C10	131
Monessen,Pa. P7	126
Pittsburg,Calif. C11	146
Portsmouth,O.(18) P12	126
Rankin,Pa. A7	126
So.Chicago,Ill. R2	126
So.SanFran.,Calif. C10	146
SparrowsPoint,Md. B2	128
Sterling,Ill.(1) N15	126

FENCE POSTS

	Col.
ChicagoHts., Ill. C2	116
Duluth A7	116
Franklin,Pa. F5	116
Huntington,W.Va. W7	116
Johnstown,Pa. B2	116
Joliet,Ill. A7	116
Marion,O. P11	116
Minnequa,Colo. C10	121
Moline,Ill. R2	112
So.Chicago R2	116
Williamsport,Pa. S19	130

WOVEN FENCE, 9-15½ Ga. Col.

AlabamaCity,Ala. R2	116
Ala.City,Ala.,17-18ga.R2	198
Aliquippa,Pa.9-14½ga.J5	116
Atlanta A11	118
Bartonville,Ill.(19) K4	116
Crawfordsville,Ind. M8	118
Donora,Pa. A7	116
Duluth A7	116
Houston,Tex. S5	124
Fairfield,Ala. T2	116
Johnstown,Pa. B2	116
Johnstn,17ga.6" B2	190
Johnstn,17ga.,4" B2	193
Joliet,Ill. A7	116
KansasCity,Mo. S5	128
Kokomo,Ind. C16	118
Minnequa,Colo. C10	121
Monessen,Pa. P7	116
Pittsburg,Calif. C11	139
Portsmouth,O.(18) P12	116
Rankin,Pa. A7	116
So.Chicago,Ill. R2	116
Sterling,Ill.(1) N15	116

BALE TIES, Single Loop Col.

AlabamaCity,Ala. R2	113
Atlanta A11	114
Bartonville,Ill.(19) K4	113
Chicago W13	113
Crawfordsville M8	115
Donora,Pa. A7	113
Duluth A7	113
Fairfield,Ala. T2	113
Joliet,Ill. A7	113
KansasCity,Mo. S5	125
Kokomo,Ind. C16	115
Minnequa,Colo. C10	118
Pittsburg,Calif. C11	137
So.Chicago,Ill. R2	113
So.SanFran.,Calif. C10	137
SparrowsPoint,Md. B2	115
Sterling,Ill.(1) N15	113

AXLES

Ind.Hardor,Ind. S13	5.25
Johnstown,Pa. B2	5.25

JOINT BARS

Bessemer,Pa. C3	4.40
Fairfield,Ala. T2	4.40
Ind.Harbor,Ind. I-2	4.40
Joliet,Ill. C3	4.40
Lackawanna,N.Y. B2	4.40
Minnequa,Colo. C10	4.40
Steelton,Pa. B2	4.40

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	5.60
KansasCity,Mo. S5	5.85
Lebanon,Pa. B2	5.60
Minnequa,Colo. C10	5.60
Pittsburgh J5	5.60
Seattle B3	6.10
So.Chicago,Ill. R2	5.60
Struthers,O. Y1	5.60
Youngstown R2	5.60

NAILS & STAPLES, Stock To dealers & Mfrs. (7) Col.

AlabamaCity,Ala. R2	106
Aliquippa,Pa. J5	106
Atlanta A11	108
Bartonville,Ill.(19) K4	106
Chicago,Ill. W13	106
Cleveland A9	111
Crawfordsville,Ind. M8	108
Donora,Pa. A7	106
Duluth A7	106
Fairfield,Ala. T2	106
Galveston,Tex. D7	114
Houston,Tex. S5	114
Johnstown,Pa. B2	106
Joliet,Ill. A7	106
KansasCity,Mo. S5	118
Kokomo,Ind. C16	108
Minnequa,Colo. C10	111
Monessen,Pa. P7	106
Pittsburg,Calif. C11	125
Portsmouth,O. P12	106
Rankin,Pa. A7	106
So.Chicago,Ill. R2	106
SparrowsPoint,Md. B2	108
Sterling,Ill.(1) N15	106
Torrance,Calif. C11	126
Worcester,Mass. A7	112

NAILS & STAPLES, Non-Stock

AlabamaCity,Ala. R2	5.35
Bartonville,Ill.(19) K4	5.35
Crawfordsville,Ind. M8	5.45
Donora,Pa. A7	5.35
Duluth A7	5.35
Johnstown,Pa. B2	5.35
Joliet,Ill. A7	5.35
Kokomo,Ind. C16	5.45
Minnequa,Colo. C10	5.60
Pittsburg,Calif. C11	6.30
Portsmouth,O. P12	5.35
Rankin,Pa. A7	5.35
So.Chicago,Ill. R2	5.35
SparrowsPoint,Md. B2	5.45
Worcester,Mass. A7	5.65

NAILS, Cut (100 lb keg) To dealers (33)

Conshohocken,Pa. A3	$6.75
Wheeling,W.Va. W10	6.75

TIE PLATES

Fairfield,Ala. T2	4.20
Gary,Ind. C3	4.20
Ind.Harbor,Ind. I-2	4.20
Lackawanna,N.Y. B2	4.20
Minnequa,Colo. C10	4.20
Pittsburg,Calif. C11	4.35
Seattle B3	4.35
Steelton,Pa. B2	4.20
Torrance,Calif. C11	4.35
Weirton,W.Va. W6	4.20

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	9.10
Lebanon,Pa.(32) B2	8.85
Minnequa,Colo. C10	9.10
Pittsburgh O3, P14	9.10
Seattle B3	9.35

RAILS	Std. No. 1	Std. No. 2	Std. All No. 2	TeeRails 60 lb Under
Bessemer,Pa. C3	3.40	3.30	3.35	3.75
Ensley,Ala. T2	3.40	3.30	...	3.75
Fairfield,Ala. T2	...	...	...	3.75
Gary,Ind. C3	3.40	3.30	3.35	...
Huntington,W.Va. W7	...	...	...	3.75
Ind.Harbor,Ind. I-2	3.40	3.30	3.35	...
Johnstown,Pa. B2	...	...	...(16)	3.75
Lackawanna B2	3.40	3.30	...	3.75
Minnequa,Colo. C10	3.40	3.30	...	4.25
Steelton,Pa. B2	3.40	3.30	...	...
Williamsport,Pa. S19	...	...	...	4.00

Key to Producing Companies

M1 McLouth Steel Corp.	P12 Portsmouth Division, Detroit Steel Corp.
M4 Mahoning Valley Steel	P13 Precision Drawn Steel
M5 Medart Co.	P14 Pitts. Screw & Bolt Co.
M6 Mercer Tube & Mfg. Co.	P15 Pittsburgh Metallurgical
M8 Mid-States Steel & Wire	P16 Page Steel & Wire Div., Amer. Chain & Cable
M9 Midvale Co.	P17 Plymouth Steel Co.
M10 Missouri-Illinois Furnace	R1 Reeves Steel & Mfg. Co.
M12 Moltrup Steel Products	R2 Republic Steel Corp.
M13 Monarch Steel Co.	R3 Rhode Island Steel Corp.
M14 McInnes Steel Co.	R5 Roebling's Sons, John A.
N2 National Supply Co.	R6 Rome Strip Steel Co.
N3 National Tube Co.	R7 Rotary Electric Steel Co.
N5 Nelson Steel & Wire Co.	R8 RelianceDiv.,EatonMfg.
N6 New Eng.HighCarb.Wire	S1 Seneca Wire & Mfg. Co.
N8 Newman-Crosby Steel	S3 Sharon Steel Corp.
N12 Niles Rolling Mill Co.	S5 Sheffield Steel Corp.
N14 Nrthwst. Steel Roll.Mills	S6 Shenango Furnace Co.
N15 Northwestern S.&W. Co.	S7 Simmons Co.
N16 New Delphos Mfg. Co.	S8 Simonds Saw & Steel Co.
O3 Oliver Iron & Steel Corp.	S9 Sloss-Sheffield S.&I. Co.
O4 Oregon Steel Mills	S13 Standard Forgings Corp.
P1 Pacific States Steel Corp.	S14 Standard Tube Co.
P2 Pacific Tube Co.	S15 Stanley Works
P4 Phoenix Iron & Steel Co.	S16 Struthers Iron & Steel
P5 Pilgrim Drawn Steel	S17 Superior Drawn Steel Co.
P6 Pittsburgh Coke&Chem.	S18 Superior Steel Corp.
P7 Pittsburgh Steel Co.	S19 Sweet's Steel Co.
P9 Pittsburgh Tube Co.	S20 Southern States Steel
P11 Pollak Steel Co.	T2 Tenn. Coal, Iron & R.R.
	T3 Tenn. Prod. & Chem.
	T4 Texas Steel Co.
	T5 Thomas Steel Co.
	T6 Thompson Wire Co.
	T7 Timken Roller Bearing
	T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
	U1 Ulster Iron Works
	U4 Universal Cyclops Steel
	V2 Vanadium Alloys Steel
	V3 Vulcan.Crucible Steel Co.
	W1 Wallace Barnes Co.
	W2 Wallingford Steel Co.
	W3 Washburn Wire Co.
	W4 Washington Steel Corp.
	W6 Weirton Steel Co.
	W7 W. Va. Steel & Mfg. Co.
	W8 West.Auto.Mach.Screw
	W9 Wheatland Tube Co.
	W10 Wheeling Steel Corp.
	W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
	W13 Wilson Steel & Wire Co.
	W14 Wisconsin Steel Div., International Harvester
	W15 Woodward Iron Co.
	W16 Worth Steel Co.
	W18 Wyckoff Steel Co.
	Y1 Youngstown Sheet&Tube

TOOL STEEL

Grade	Cents per lb	Grade	Cents per lb
Reg. Carbon	21.00	18W,4Cr,3V	123.00
Extra Carbon	24.50	18W,4Cr,2V,9Co	185.50
Spec. Carbon	29.50-31.50	18W,4Cr,2V,6Co	169.50
Oil Hardening	32.00	18.25W,4.25Cr,1V,4.75Co	156.50
Cr Hot Wrk.	32.00	20.25W,4.25Cr,1.6V,12.25Co	293.50
Hi-Carbon-Cr	57.50	1.5W,4Cr,1V,8.5Mo	71.50
18W,4Cr,1V	100.00	6.4W,4.5Cr,1.9V,5Mo	76.50
18W,4Cr,2V	113.00	6W,4Cr,3V,6Mo	97.00

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, H4, J3, L3, M14, S8, T7, U4, V2, V3

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant. (4) Reinforcing.
(5) Philadelphia del.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pittsburgh base.
(12) Worcester, Mass. base.
(13) 3" & wider; over ½" to under 3" 5.50c.
(14) Also wide flange beams.
(15) ¼" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pittsburgh base.
(20) Deduct 0.25c for untreated.
(21) New Haven, Conn. base.
(22) Del. San Fran. Bay area.
(24) Deduct 0.35c for finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, to fabricators (¾" bar, elec. furn. billet, 5.03c); to consumers, 5.28c.
(27) Bar mill sizes.
(28) Bonderized.
(31) Not annealed.
(32) Untreated.
(33) To jobbers, deduct 20 cents.
(34) 6.70c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 Ga. & lighter; 60" & narrower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 4.75c. 0.035" and heavier.

STANDARD PIPE, T. & C.

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅛	5.5c	0.24	36.5	34.5	33.5	5.5	3.5	5.5
¼	6.0	0.42	33.5	31.5	30.5	5.5	3.5	6.5
⅜	6.0	0.57	29.0	27.0	26.0	0.5	+1.5	2.5
½	8.5	0.85	40.5	38.5	39.5	21.0	19.0	20.0
¾	11.5	1.13	43.5	41.5	42.5	25.0	23.0	24.0
1	17.0	1.68	46.0	44.0	45.0	28.0	26.0	24.0
1¼	23.0	2.28	46.5	44.5	45.5	28.5	26.5	27.5
1½	27.5	2.73	47.0	45.0	46.0	29.0	27.0	28.0
2	37.0	3.68	47.5	45.5	46.5	29.5	27.5	28.5
2½	58.5	5.82	48.0	46.0	47.0	30.0	28.0	29.0
3	76.5	7.62	48.0	46.0	47.0	30.0	28.0	29.0

Column A: Etna, Pa. N2; Monaca, Pa. P9; Sharon, Pa. M6; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 1½ percentage points lower on ⅛", 2 points lower on ¼", 3 points lower on ⅜", W10. Wheatland, Pa., 2 points lower on ⅛" through ⅜", W9. Following make ½" and larger: Lorain, O. N.3; Youngstown, plus 43% on 3½" and 4", R2; Youngstown Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 11 points lower on ⅛" and larger continuous weld and 31% on 3½" and 4".

Columns B & E: Sparrows Point, Md. B2.

Columns C & F: Indiana Harbor, Ind., ½" through 3", Y-1; Alton, Ill. (Lorain, O., base) L1.

Column D: Etna, Pa. N2; Monaca, Pa. quotes 1 pt lower on ⅛" through 3", P9; Sharon, Pa. M6, quotes 1 pt lower on ⅛", 1 pt higher on ⅜" and 1 pt lower on ½" through 3"; Butler, Pa., ⅛" through ⅜", F6; Benwood, W. Va., W10 except 3½ pts lower on ⅛", 2½ pts lower on ¼", 3 pts lower on ⅜" Wheatland, Pa., except 2 pts lower on ⅛", ¼" and ⅜"; W9. Following make ½" and larger: Lorain, N3; Youngstown, plus 24.5% on 3½" and 4", R2; Youngstown, Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 8 pts lower on ½" and larger continuous weld and 15.5% on 3½" and 4".

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	36.0	17.5	36.0	17.5
2½	58.5	5.82	39.0	20.5	39.0	20.5
3	76.5	7.62	39.0	20.5	39.0	20.5
3½	92.0	9.20	41.0	22.5	41.0	22.5
4	$1.09	10.89	41.0	22.5	41.0	22.5
5	1.48	14.81	41.0	22.5	41.0	22.5
6	1.92	19.18	41.0	22.5	41.0	22.5

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5; Lorain, N3; Youngstown, Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft inclusive.

O.D. In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	12.36	14.39	13.96	13.96
1¼	13	14.63	17.05	14.19	16.54
1½	13	16.17	19.02	15.68	18.45
1¾	13	18.39	21.64	17.84	20.99
2	13	20.61	24.24	19.99	23.51
2¼	13	22.96	27.03	22.27	26.22
2¼	12	25.29	29.76	24.53	28.87
2½	12	27.71	32.58	26.88	31.60
2¾	12	29.36	34.53	28.48	33.49
3	12	30.82	36.27	29.90	35.18
3¼	11	35.87	42.22	34.79	40.95
3½	11	38.52	45.35	37.36	43.99
4	10	47.82	56.25	46.39	54.56
4½	9	63.37	74.59	61.47	72.35
5	9	73.37	86.32	71.17	83.73
6	7	112.62	132.51	....	....

Boiler tube producers include Babcock & Wilcox Tube Co., National Tube Co., Globe Steel Tubes Co., Pittsburgh Steel Co., Republic Steel Corp., Standard Tube Co.

CLAD STEELS

(Cents per pound)

Cladding	Plates Carbon Base	Strip Cold-Rolled Carbon Base	Sheets Carbon Base 10%	Sheets Carbon Base 20%	Copper Base Both Sides
Stainless	10% 20%	10% Both Sides			
302	....	....	19.75	21.50–24.00	75.00
304	23.50 26.50–28.00	....	20.75–23.50	22.50–25.5	77.00
305	....	....	....	....	79.00
309	29.00 33.50	....	....	....	....
310	35.00 39.50	....	....	....	105.00
316	28.00 31.00–32.50	....	26.00	28.00–34.5	....
317	33.00 37.50	....	....	....	....
318	32.00 36.50	....	....	....	....
321	25.00 29.50	....	23.00	25.00	90.00
347	26.00 29.00–30.50	....	24.00	26.00–31.5	94.00
405	19.75 26.25	....	....	....	....
410	19.25 25.75	....	....	....	....
430	19.25 25.75	....	....	....	....
Nickel	31.00 41.00	33.50 45.00	....	....	88.00
Inconel	39.00 51.00	....	....	....	140.00
Monel	32.00 42.00	....	....	....	83.00
Copper*	....	21.45† 27.15‡	....	....	....

* Deoxidized. † 17.95c for hot-rolled. ‡ 23.90c for hot-rolled. Production points for carbon base products: Stainless plates, sheet, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. W16, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel monel, copper-clad strip, Carnegie, Pa., S18. Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:
- ½-in. & smaller diam.. 27
- ⅝-in. & ⅞-in. 29
- 1-in. and larger 26

Longer than 6 in.:
- All diams. 22

Lag bolts, all diams.:
- 6 in. and shorter 30
- over 6 in. long 28

Ribbed Necked Carriage. 26
Blank 40
Plow 40
Step, Elevator, Tap, and Sleigh Shoe 28
Tire bolts 20
Boiler & Fitting-Up bolts 37

NUTS

H.P. & C.P. Reg. & Heavy Square:
- ½-in. and smaller 25
- ⅝-in. & ⅞-in. 23
- 1-in.-1½-in. 23
- 1⅝ in. and larger 16

H.P. Hex.:	Reg.	Heavy
½-in. & smaller	33	29
⅝-in. & ⅞-in..	28	25
1-in.-1½-in. ..	25	23
1⅝ in. & larger	17	16

C.P. Hex:		
½-in. & smaller	33	29
⅝-in. & ⅞-in..	30	27
1-in. & 1½ in.	27	24
1⅝ in. & larger	20	17

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Hvy.	Reg.	Lght.
½-in. and smaller	35	41	41
⅝-in. & ⅞-in.	30	36	36
1-in.-1½-in. ,	27	31	33
1⅝-in.&larger	17	21	..

STEEL STOVE BOLTS

(F.o.b. plant; per cent off list in packages)

Plain finish ..... 63.5 & 10
Plated finishes ... 50 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:
- ¼-in. through ⅝-in. .. 50
- ¾-in. through 1 in. ... 43

Longer than 6 in.:
- ¼-in. through ⅝-in. .. 33
- ¾-in. through 1 in. ... 13

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter 46
1 in. and smaller diam. x over 6 in. 33

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller 41
¼-in. diam. & larger 24
N.F. thread, all diams... 18

RIVETS

F.o.b. midwestern plants
Structural ½-in., larger 7.25c
7/16-in., under .....43 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers .....List to 50c off

ELECTRODES

(Threaded, with nipples, unboxed, f.o.b. plant)

GRAPHITE

Inches Diam.	Inches Length	Cents per lb
17,18,20	60,72	16.00
8 to 16	48,60,72	16.50
7	48,60	17.75
6	48,60	19.00
4,5⅛	40	19.50
3	40	20.50
2½	24,30	21.00
2	24,30	23.00

CARBON

40	100,110	7.50
35	100,110	7.50
30	84,110	7.50
24	72 to 104	7.50
17 to 20	34,90	7.50
14	60,72	8.00
10,12	60	8.25

STAINLESS STEEL

(Cents per pound)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	39.00	32.00	30.00
302...	39.00	34.50	30.00
303...	41.00	38.00	32.50
304...	41.00	36.50	31.50
309...	53.50	52.50	43.00
316...	54.50	56.50	47.50
321...	47.00	46.00	35.50
347...	51.50	50.00	40.00
410...	34.50	28.50	24.50
416...	35.00	35.00	25.00
420...	42.00	45.00	30.00
430...	37.00	29.00	25.00
501...	25.50	24.00	13.00
502...	26.50	25.00	14.00

Baltimore, Types 301 through 347 sheet, except 309 E2.
Baltimore, bars, wire and structurals A10.
Brackenridge, Pa., sheets A4.
Bridgeville, Pa., bars, wire, sheets & strip U4.
Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502 A10.
Carnegie, Pa., strip except Type 416, S18.
Cleveland, strip A7.
Detroit, strip, except Types 303, 309, 321, 416, 420, 501 and 502 M1.
Dunkirk,N.Y., bars, wire A4.
Duquesne, Pa., bars C3.
Fort Wayne, Ind., bars and wire, except Types 501 and 502 J6.
Gary, Ind., sheets except Type 416 C3.
Harrison, N. J., strip C18.
Harrison, N. J., Types 302, 304, 316 wire and strip D6.
Massillon, all products R2.
McKeesport,Pa., bars; sheets except Type 416 C3.
McKeesport, Pa., bars & wire except Types 301, 309, 501 & 502; strip Types 410 & 430 only F2.
Middletown, O., sheets except Types 303, 416, 420, 501 and 502 A10.
Midland, sheets & strip C18.
Munhall, Pa., bars C3.
Pittsburgh, sheets C18.
Reading, Pa., bars & strip C4.
So. Chicago, Ill., bars & structurals C3.
Syracuse, N. Y., bars, wire & structurals C18.
Titusville, Pa., bars, U4.
Wallingford, Conn., strip, except 309, W2 quotes 0.25 cents higher.
Washington, Pa., bars, sheets & strip J3.
Washington, Pa., Types 301 through 347 sheets & strip as listed except 303 & 309; 316 sheets 59.50c, strip 61.50c W4.
Watervliet, N. Y., structurals & bars A4.
Waukegan, bars & Wire A7.
West Leechburg, Pa., strip, A4.
Youngstown, strip C8.

COAL, CHEMICALS

Spot, cents per gallon, ovens
Pure benzol 25.00-30.00
Toluol, one deg...21.00-28.00
Industrial xylol ..21.00-29.50
Per ton bulk, ovens
Sulphate of ammonia.$32-45
Cents per pound, ovens
Phenol, 40 (carlots, non-returnable drums) ..17.25
Do., less than carlots..18.00
Do., tank cars 15.50

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $39; less than 60%, $36.
Imported, net ton, duty paid, metallurgical grade, $28-$29.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted.)

	Cents
Sponge Iron:	
98+% Fe, carlots..	15.00
Swedish, c.l.f. New York, in bags....7.40-8.50	
Electrolytic Iron:	
Annealed, 99.5% Fe	39.50
Unannealed, 99+% Fe	33.50
Unannealed 99+% Fe(minus 325 mesh)	48.50
Powder Flakes	44.50
Carbonyl Iron:	
97.9-99.8%, size 5 to 10 microns..70.00-135.00	
Aluminum:	
Carlots, freight allowed	27.00
Atomized, 500 lb drums, freight allowed	30.00
Brass, 10-ton lots.28.50-31.25	
Copper:	
Electrolytic	33.75
Reduced	33.50
Lead	20.50
Manganese:	
Minus 100-mesh	52.00
Minus 35 mesh	48.00
Minus 200 mesh....	56.00
Nickel unannealed ...	75.50
Nickel-Silver, 10-ton lots	41.75
Silicon	34.00
Solder (plus cost of metal)	8.50
Stainless Steel, 302 ...	75.00
Tin	$1.20
Zinc, 10-ton lots.20.50-28.00	
Tungsten:	Dollars
99%, minus 80 to 200 mesh, freight allowed: over 1000 lb	2.90
1000 lb	2.95
less than 1000 lb..	3.00
98.8% minus 65 mesh, freight allowed: 1000 lb and over...	2.90
less than 1000 lb..	3.00
Molybdenum:	
99%, minus 80 to 200 mesh, over 500 lb	2.25
200 to 500 lb	2.60
less than 200 lb ..	2.75
82-85%, freight allowed, 2000 lb and over ..	2.40
less than 2000 lb..	2.45
Chromium, electrolytic 99% Cr min.	3.50

METALLURGICAL COKE

Price per net ton

BEEHIVE OVENS

Connellsvll.fur.	.$14.00-14.50
Connellsvll.fdry.	.15.50-16.50
New River, foundry	...19.00
Wise county, foundry	..15.95
Wise county, furnace	..15.20

OVEN FOUNDRY COKE

Kearney, N. J., ovens	.$22.00
Everett, Mass., ovens New England, del...	‡23.40
Chicago, ovens	21.00
Chicago del.	†22.45
Detroit, del.	24.91
Terre Haute, ovens ...	21.20
Milwaukee, ovens	21.75
Indianapolis, ovens	20.75
Chicago, del.	24.12
Cincinnati, del.	23.67
Detroit, del.	24.65
Ironton, O., ovens	20.40
Cincinnati, del.	22.71
Painesville, O., ovens..	21.90
Buffalo, del.	24.02
Cleveland, del.	23.62
Erie, del.	22.04
Birmingham, ovens ...	19.15
Birmingham, del. ...	20.20
Philadelphia, ovens ...	21.25
Neville Island,Pa.,ovens	21.00
Swedeland, Pa., ovens..	21.20
St. Louis, ovens	22.99
St. Louis, del.	24.12
Portsmouth, O., ovens..	20.15
Cincinnati, del.	22.71
Detroit, ovens	21.65
Detroit, del.	*22.65
Buffalo, del.	24.69
Flint, del.	24.09
Pontiac, del.	23.04
Saginaw, del.	24.40

Includes representative switching charge of: *, $1.00; †, $1.45, one-track charge being $1.20, two tracks $1.40, and three or more tracks $1.50. ‡ Or within $4.15 freight zone from works.

WAREHOUSE STEEL PRODUCTS

(Prices, cents per pound, for delivery within switching limits, subject to extras)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140§		Carbon	Floor
New York(city)	5.82	6.84	7.84	6.14	...	5.97	6.64	8.60	5.95	6.18	7.64
New York(c'try)	5.52	6.64	7.54	5.84	...	5.67	6.44	8.40	5.65	5.88	7.34
Boston (city) ..	5.95	6.75	7.89	5.90	...	5.80	6.39	8.70	5.95	6.58	7.48
Boston (c'try) .	5.75	6.55	7.69	5.70	...	5.60	6.19	8.50	5.75	6.38	7.28
Phila. (city) ..	6.60-6.70	6.75	7.20	5.90	...	5.85	6.46	8.40	5.70	5.90	7.00
Phila. (c'try) ..	6.35-6.45	6.50	6.95	5.65	...	5.60	6.21	8.15	5.45	5.65	6.75
Balt. (city) ...	5.35	6.59	6.77	5.79	...	5.79	6.39	...	5.89	5.60	7.24
Balt. (c'try) ..	5.15	6.39	6.57	5.59	...	5.59	6.19	...	5.69	5.40	7.04
Norfolk, Va. ..	6.10	...	...	6.30	...	6.15	7.20	...	6.20	6.15	7.55
Richmond, Va..	5.55	...	6.80	5.83	...	5.73	6.30	...	5.83	5.65	7.33
Wash. (w'hse) .	5.56	6.80	6.73	6.00	...	6.00	6.62	...	6.10	5.81	7.45
Buffalo (del.)..	5.35	6.15	7.10	5.61	...	5.35	5.95	10.10††[8]	5.55	5.85	7.15
Buffalo (w'hse).	5.15	5.95	6.90	5.41	...	5.15	5.75	9.90††[8]	5.35	5.65	6.95
Pitts. (w'hse)..	5.15	5.95*	6.70-6.95	5.20	6.15	5.10	5.75	9.55††	5.25	5.35	6.60
Detroit (w'hse)	5.33	6.08*	7.09	5.49	...	5.39	5.91	9.86††[8]	5.64	5.79	6.88
Cleveland (del.)	5.35	6.15	7.50	5.44	6.35	5.32	5.95	8.31	5.57	5.72	6.92
Cleve. (w'hse).	5.15	5.95	7.30	5.24	6.15	5.12	5.75	8.16	5.37	5.52	6.72
Cincin. (city) ..	5.57	6.14	6.54	5.50	...	5.50	6.11	...	5.79	5.94	7.10
Chicago (city) .	5.35	6.15	7.15	5.30	...	5.30	5.85	9.75††[8]	5.45	5.60	6.80
Chicago (w'hse)	5.15	5.95	6.95	5.10	...	5.10	5.65	9.55††[8]	5.25	5.40	6.60
Milwaukee(city)	5.49	6.29	7.29	5.44	...	5.44	6.09	9.89††[8]	5.59	5.74	6.94
Milwau. (c'try).	5.29	6.09	7.09	5.24	...	5.24	5.89	9.69††[8]	5.39	5.54	6.74
St. Louis (del.)	5.68	6.48	7.28	5.63	...	5.63	6.28	10.08††[8]	5.78	5.93	7.13
St. L. (w'hse).	5.48	6.28	7.08	5.43	...	5.43	6.08	9.88††[8]	5.58	5.73	6.93
Kans. City(city)	5.95	6.75	7.60	5.90	...	5.90	6.55	...	6.05	6.20	7.60
KansCity(w'hse)	5.75	6.55	7.40	5.70	...	5.70	6.35	...	5.85	6.00	7.40
Omaha, Nebr. .	6.13‡	...	8.33	6.13	...	6.18	6.98	...	6.18	6.38	7.83
Birm'ham (del.)	5.30	6.10	6.30[2]	5.25	...	5.25	6.88	...	5.40	5.55	7.83
Birm'hm(w'hse)	5.15	5.95	6.15[2]	5.10	...	5.10	...	...	5.25	5.40	...
Los Ang. (city)	6.10	7.65	7.90	6.15	8.90	6.10	7.75	...	6.10	6.20	8.40
L. A. (w'hse)..	5.90	7.45	7.70	5.95	8.70	5.90	7.55	...	5.90	6.00	8.20
San Francisco .	6.50[9]	7.60[3]	7.50[2]	7.45[9]	8.25[3]	6.30[9]	7.55	...	6.30[9]	6.40[9]	8.50[9]
Seattle-Tacoma.	6.60	8.15[3]	...	6.85	...	6.35	8.50	10.10	6.20	6.35[7]	8.40[7]

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes extra for 10 gage; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb; [5]—1000 to 1999 lb; [7]—300 to 999 lb; [9]—400 to 9999 lb.

REFRACTORIES

(Prices per 1000 bricks, f.o.b. plant)

FIRE CLAY BRICK

Super Duty: St. Louis, Vandalia, Farber, Mexico, Mo., Olive Hill, Ky., Clearfield, or Curwensville, Pa., Ottawa, Ill., $106. Hard-fired, $142 at above points.

High-Heat Duty: Salina, Pa. $91; Woodbridge, N. J., St. Louis, Farber, Vandalia, Mexico, Mo., West Decatur, Orviston, Clearfield, Beach Creek, or Curwensville, Pa., Olive Hill, Hitchins, Haldeman, or Ashland, Ky., Troup, or Athens, Tex., Stevens Pottery, Ga., Portsmouth, or Oak Hill, O., Ottawa, Ill., $86.

Intermediate-Heat Duty: St. Louis, or Vandalia, Mo., West Decatur, Orviston, Beach Creek, or Clearfield, Pa., Olive Hill, Hitchins, or Haldeman, Ky., Athens, or Troup, Tex., Stevens Pottery, Ga., Portsmouth, O., Ottawa, Ill., $80.

Low-Heat Duty: Oak Hill, or Portsmouth, O., Clearfield, Orviston, Pa., Bessemer, Ala., $72; Ottawa, Ill., $70.

LADLE BRICK

Dry Press: Freeport, Merill Station, Clearfield, Pa., Irondale, Wellsville, O., Chester, W. Va., New Cumberland, W. Va., $60.

Wire Cut: Chester, W. Va., Wellsville, O., New Cumberland, W. Va., $58.

MALLEABLE BUNG BRICK

St. Louis, Mo., Olive Hill, Ky., $96; Ottawa, Ill., $90; Beach Creek, Pa., $86.

SILICA BRICK

Mt. Union, Claysburg, or Sproul, Pa., Portsmouth, O., Ensley, Ala., $86; Hays, Pa., $91; Joliet or Rockdale, Ill., E. Chicago, Ind., $95; Lehi, Utah, Los Angeles, $101.

Eastern Silica Coke Oven Shapes (net ton): Claysburg, Mt. Union, Sproul, Pa., Birmingham, $84.

Illinois Silica Coke Oven Shapes (net ton): Joliet or Rockdale, Ill., E. Chicago, Ind., Hays, Pa., $85.

BASIC BRICK

(Base prices per net ton; f.o.b. works, Baltimore or Chester, Pa.)

Burned chrome brick, $68; chemical-bonded chrome brick, $72; magnesite brick, $94; chemical-bonded magnesite, $83.

MAGNESITE

(Base prices per net ton, f.o.b. works, Chewelah, Wash.)

Domestic dead-burned, ⅜" grains; bulk, $33; single paper bags, $38.

DOLOMITE

(Base prices per net ton)

Domestic, dead-burned bulk; Bonne Terre, Mo., Blue Bell, Williams, Millville, W. Va., Gibsonburg, Woodville, O., $12.25; Thornton, McCook, Ill., $12.35; Dolly Siding, Mo., $12.45; Martin, Millersville, Narlo, Clay Center, and Bettsville, O., Billmeyer, Plymouth Meeting, Pa., $13.

ORES

LAKE SUPERIOR IRON ORE

Gross ton, 51½% (natural), lower lake ports. After Jan. 25, 1950, increases or decreases, if any, in upper lake rail freight, dock handling charges and taxes thereon are for buyer's account.

Old range bessemer	$8.10
Old range nonbessemer	7.95
Mesabi bessemer	7.85
Mesabi nonbessemer	7.70
High phosphorus	7.70

EASTERN LOCAL ORE

Cents per unit, del. E. Pa.

Foundry and basic 56.62% concentrates contract	16.00

FOREIGN ORE

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	17.00
Long-term contract	15.00
North African hematites	15.75
Brazilian iron ore, 68-69%	18.00

TUNGSTEN ORE

Net ton unit, duty paid

Chinese	$29.00-$30.00
Brazilian	29.00-30.00
Bolivian	29.00-30.00
Domestic scheelite, del.	32.00

MANGANESE ORE

Long term contracts, nominal; nearby, 48%, duty paid, 79.8c-81.8c per long ton unit, c.i.f. U. S. ports; prices on lower grades adjusted to manganese content and impurities.

CHROME ORE

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	$32.50
48% 3:1	35.00-36.00
48% no ratio	26.00

South African Transvaal

44% no ratio	$17.00-18.00
45% no ratio	17.30-18.30
48% no ratio	26.00
50% no ratio	27.00-27.50

Brazilian

44% 2.5:1 lump	$32.00

Rhodesian

45% no ratio	$20.00-21.00
48% no ratio	26.00
48% 3:1 lump	35.00-36.00

Domestic—rail nearest seller

48% 3:1	$39.00

MOLYBDENUM

Sulphide concentrates per lb, molybdenum content, mines	$0.90

FERROALLOYS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si), Carlot per gross ton, $70, Palmerton, Pa.; $71, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $172 per gross ton of alloy, c.l., packed, $184; gross ton lots, packed, $199; less gross ton lots, packed, $216; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., or Welland, Ont. Base price: $174, f.o.b. Birmingham and Johnstown, Pa., furnaces, $172, Sheridan, Pa.; $175, Etna, Pa. Shipment from Pacific Coast warehouses by one seller add $33 to above prices, f.o.b. Los Angeles, San Francisco, Portland, Oreg. Shipment from Chicago warehouse, ton lots, $214; less gross ton lots, $231 f.o.b. Chicago. Add or subtract $2.15 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 80-85%). Carload, lump, bulk, max. 0.10% C, 24.75c per lb of contained Mn, carload packed 25.5c, ton lot 26.6c, less ton 27.8c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 75% C—max. 7% Si. **Special Grade:** (Mn 90% approx., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max., Si 1.5% max.). Carload, lump, bulk 18.15c per lb of contained Mn, carload packed 18.9c, ton lot 20.0c, less ton 21.2c. Delivered. Spot, add 0.25c.

Manganese Metal, 2" x D (Mn 96% min., Fe 2% max., Si 1% max., C 0.2% max.): Carload lump bulk, 29c per lb of metal; packed, 29.75c; ton lot 31.25c; less ton lot 33.25c. Delivered. Spot, add 2c.

Manganese, Electrolytic: 250 lb to 1999 lb, 32c; 2000 to 39,999 lb, 30c; 40,000 lb or more, 28c. Premium for hydrogen-removed metal 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 8.95c per lb of alloy, carload packed, 9.70c, ton lot 10.60c, less ton 11.60c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk, 20.5c per lb of contained Cr, c.l., packed 21.4c, ton lot 22.55c, less ton 23.95c. Delivered. Spot, add 0.25c.

"SM" High-Carbon Ferrochrome: (Cr 60-65%, Si 4-6%, Mn 4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

(*Please turn to page* 123)

Shortages Crimp Brass Mills

Short supplies of copper and zinc force several companies to reduce their work weeks. Price steadiness marks nonferrous metals market

METALWORKING companies may experience further difficulty in procuring copper and brass products, for Connecticut brass mills are reducing their work weeks as a result of the continuing shortage of copper and zinc.

American Brass Co. cut the work week in its casting shop to 32 hours and said a further reduction would come if the supply of materials does not improve. Similar reductions were planned by Scovill Mfg. Co. and Chase Brass & Copper Co. All three companies recently reduced their work week from 48 to 40 hours and eliminated all overtime work as a result of the serious shortage of materials. Bristol Brass Corp. also reported that shortages of copper and zinc were threatening further cuts in its work schedules.

Ray of Hope—A note of encouragement is seen, however, in the Copper Institute's monthly report. It shows copper deliveries to fabricators turned up substantially in August and that at the same time refineries were able to increase their stocks of refined metal. Also significant is the fact primary copper production in the United States rose in August to a point higher than it has been for a long time.

Deliveries of refined copper to fabricators in August totaled 112,083 net tons, compared with only 95,983 tons in July. The August shipments were exceeded by four other months this year.

The increase in refineries' stocks of refined copper in August was the first since a year ago, as is shown in the accompanying chart. Stocks at the end of August totaled 50,952 tons, compared with 48,266 tons at the beginning of the month.

Helping make possible the increase in deliveries of refined copper to fabricators in August was a rise in refining from 96,734 net tons in July to 108,465 tons in August.

In rising to a high point, primary copper production in August touched 81,094 net tons, compared with 76,563 tons in July.

Price Variety—To supplement domestic copper available to them, the brass mills are importing about a third of their copper supply. The imports have been carrying a two-cents-a-pound import duty since July 1 because suspension of the duty was not extended. Price of electrolytically refined copper runs from 22.5 cents a pound upward. The country's two largest producers quote that price for October deliveries. Other U. S. producers are quoting 24.5 cents. Foreign metal is 26.5 cents (24.5 cents base plus 2 cents for import duty). In addition there are gray market prices, reported to range as high as 32.5 cents a pound.

Exports Halted—Because domestic demand for copper far exceeds the supply of that metal the government has temporarily stopped exports of copper from the U. S. No applications for export licenses have been approved by the Department of Commerce since Sept. 8. This policy is preliminary to setting export quotas on copper and copper and brass products for fourth-quarter shipments.

Zinc Demand Outruns Supply

Higher price has been no deterrent to demand for zinc. Consumers, particularly galvanizers and die-casters, are still seeking more of this metal than is available. Producers are rationing output to regular customers on the basis of past consumption. The current price of 17.5 cents a pound for prime western zinc at East St. Louis has been in effect since Sept. 7.

Tin Supply Called Ample

Tin is one metal which apparently is not in short supply. C. A. Ilgenfritz, vice president, United States Steel Corp., in reviewing the tin situation, says a close examination of the latest figures available reveals there is much more tin above ground today than existed at the beginning of World War II, with sufficient supplies in the U. S. to take care of our normal requirements for at least three years.

"That a condition of oversupply is more imminent than commonly suspected is borne out by the insistent demands of producers to negotiate as soon as possible a commodity agreement on tin, the primary objective of which will be to prevent the development of a surplus and its ruinous consequences to them," Mr. Ilgenfritz asserts.

"So far as tin alone is concerned there seems to be no apparent justification at the moment for control of any kind. The metal is readily available at a price, and to impose inventory, end-use, and price controls may very well discourage importation on the part of private consumers by placing the entire burden of assuring an adequate supply on the government," Mr. Ilgenfritz says.

U. S. Steel Corp. has a considerable interest in the tin supply, for it is an important producer of tin plate and terne plate.

Latest figures from the Department of Commerce show that tin plate and terne plate use nearly half of all tin consumed in the United States. Of 8751 long tons of tin consumed in June, 3250 tons went into tin plate and terne plate. The next two largest outlets for tin were solder, which took 2187 long tons, and brass and bronze, which took 1652 tons.

Demand Still Strong for Lead

Demand for lead continues strong and as a result most sellers are practically sold out for October delivery. Price is unchanged, 15.8 cents for common grade, St. Louis.

Antimony Supply Tightens

Supply of antimony has tightened up considerably in a short space of time. Only a few months ago it was easily obtained.

Flow of imported metal has been steadily declining and is now merely a trickle.

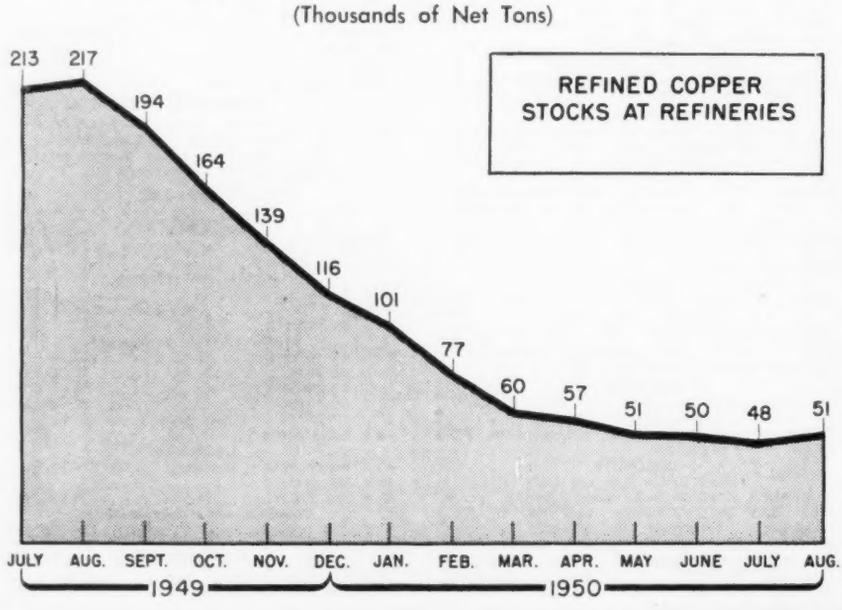
The price recently rose 3.5 cents a pound to 32 cents.

The Bunker Hill smelter which was closed a few months ago when demand for antimony was light is still idle.

Yearlong Drop in Refiners' Copper Stocks Ended

. . . slight gain made even though shipments were stepped up

(Thousands of Net Tons)



NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 22.50-24.50c, Conn. Valley; Lake 24.62½c, delivered.

Brass Ingot: 85-5-5-5 (No. 115) 25.50c; 88-10-2 (No. 215) 35.00c; 80-10-10 (No. 305) 29.50c; No. 1 yellow (No. 405) 21.75c.

Zinc: Prime western 17.50c; brass special 17.75c; intermediate 18.00c, East St. Louis; high grade 18.60c, delivered.

Lead: Common 15.80c; chemical 15.90c; corroding 15.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 17.50c, pigs 16.50c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 25.75-27.00c; No. 12 foundry alloy (No. 2 grade) 25.25-26.50c steel deoxidizing grades, notch bars, granulated or shot; Grade 1, 26.50-27.50c; grade 2 25.50-26.50c; grade 3, 25.00-26.00c; grade 4, 24.50-25.50c. Prices include freight at c.l. rate up to 75 cents per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 22.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 102.50 ,October 102.00c, November 101.50c, December 101.00c.

Antimony: American 99-99.8% and over but not meeting specifications below 32.00c; 99.8% **and over (arsenic 0.05% max.;** other impurities 0.1% max.) 32.50c; f.o.b. Laredo, Tex., **for bulk shipments. Foreign, 99%; Chinese** nom.; English, nom.; Belgian, 28.50c, duty paid, New York.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 48.00c; 25-lb pigs, 50.50c; "XX" nickel shot, 51.50c; "F" nickel shot or ingots, for addition to cast iron, 48.50c. Prices include import duty.

Mercury: Open market, spot, New York $83-$85 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $30.00 per lb contained Be, f.o.b., Cleveland and Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2.40 del.; special or patented shapes, $2.55.

Cobalt: 97-99%, $1.80 per lb for 500 lb (keg); $1.82 per lb for 100 lb (case); $1.87 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York, 72.75c per oz.

Platinum: $100-$103 per ounce from refineries.

Palladium: $24 per troy ounce.

Iridium: $220 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill)

Sheet: Copper 39.43; yellow brass 36.53; commercial bronze, 95%, 39.43; 90%, 39.03; red brass, 85% 38.11; 80%, 37.72; best quality, 37.32; nickel silver, 18%, 50.24; phosphor-bronze, grade A, 5% 58.02.

Rods: Copper, hot-rolled 35.28; cold-drawn 36.53; yellow brass free cutting, 30.95; commercial bronze, 95% 39.12; 90% 38.72; red brass 85% 37.80; 80% 37.41.

Seamless Tubing: Copper 39.47; yellow brass 39.54; commercial bronze 90% 41.69; red brass 85% 41.02; 80% 40.63.

Wire: Yellow brass 36.82; commercial bronze, 95% 39.72; 90% 39.32; red brass, 85% 38.40; 80% 38.01; best quality brass 37.61.

Copper Wire: Bare, soft, f.o.b. eastern mills, c.l. 26.67-28.67, l.c.l. 27.17-29.17, 100,000 lb lots 26.545-28.545; weatherproof, f.o.b. eastern mills, c.l. 28.10-29.60, l.c.l. 28.60-30.10, 100,000 lb lots 27.85-29.35; magnet, del., 15,000 lb or more 32.50-34.50, l.c.l. 33.25-35.25.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders.

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	27.4	...	...
0.135-0.096	12-48	27.9	...	...
0.095-0.077	12-48	28.4	26.5	30.1
0.076-0.061	12-48	29.0	26.7	30.3
0.060-0.048	12-48	29.2	26.9	30.6
0.047-0.038	12-48	29.6	27.1	30.9
0.037-0.030	12-48	30.0	27.5	31.4
0.029-0.024	12-48	30.4	27.8	31.8
0.023-0.019	12-36	31.0	28.2	32.3
0.018-0.017	12-36	31.6	28.8	33.1
0.016-0.015	12-36	32.3	29.4	34.0
0.014	12-24	33.2	30.2	35.1
0.013-0.012	12-24	34.1	30.9	36.0
0.011	12-24	35.1	31.8	37.2
0.010-0.0095	12-24	36.1	32.8	38.5
0.009-0.0085	12-24	37.3	33.9	40.0
0.008-0.0075	12-24	38.6	35.1	41.6
0.007	12-18	40.0	36.4	43.4
0.006	12-18	41.5	37.7	47.5

* Minimum length, 60 inches. † Maximum diameter, 24 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or distance across flats	—Round— R317-T4, 17S-T4	R317-T4	——Hexagonal—— 17S-T4
0.125	48.5	....	....
0.156-0.203	41.5	....	....
0.219-0.313	38.5	....	....
0.344	37.5	....	47.5
0.375	37.0	46.0	44.5
0.406	37.0	....	....
0.438	37.0	46.0	44.5
0.469	37.0	....	....
0.500	37.0	46.0	44.5
0.531	37.0	....	....
0.563	37.0	....	42.0
0.594	37.0	....	....
0.625	37.0	43.5	42.0
0.656	37.0	....	....
0.688	37.0	....	42.0
0.750-1.000	36.0	41.0	39.5
1.063	36.0	....	38.0
1.125-1.500	35.0	39.5	38.0
1.563	35.0	....	37.0
1.625	34.0	....	37.0
1.688-2.000	34.0	....	....

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $21.00 per cwt; add 50c cwt, 10 sq ft to 140 sq ft. Pipe: Full coils $21.00 per cwt. Traps and bends: List prices plus 60%.

ZINC

Sheets, 23.50-23.75c, f.o.b. mill, 36,000 lb and over. Ribbon zinc in coils, 22.50-23.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 21.50-22.00c; over 12-in., 22.50-23.00c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 69.00c. Strip, cold-rolled, 77.00c. Rods and shapes, 65.00c. Plates, 67.00c. Seamless tubes, 98.00c.

MONEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled 53.00c. Strip cold-rolled 56.00c. Rods and shapes, 51.00c. Plates, 52.00c. Seamless tubes, 86.00c. Shot and blocks, 46.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.31 in. in diameter, less than 25 lb. 55.00-59.00c; 25 to 99 lb. 45.00-49.00c; 100 lb to 5000 lb, 38.00c.

Plating Materials

Chromic Acid: 99.9% flake, f.o.b. Philadelphia, carloads, 25.50c; 5 tons and over 26.00c; 1 to 5 tons, 26.50c; less than 1 ton 27.00c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed; Flat untrimmed 34.09c; oval 33.59c; cast 32.12c.

Copper Cyanide: 70-71% Cu, 100-lb drums, 1000 lb 53.90c, under 1000 lb 55.90c, f.o.b. Niagara Falls, N. Y.

Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 18.00c; 1000 to 19,000 lb, 17.00c, f.o.b. Niagara Falls, N. Y. Packaged in 100 lb drums add ½-cent.

Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 200 lb, nom.; over 200 lb, nom., f.o.b. Cleveland.

Nickel Anodes: Rolled oval, carbonized, carloads, 65.00c; 10,000 to 30,000 lb, 63.00c; 3000 to 10,000 lb, 67.00c, 500 to 3000 lb, 68.00c; 100 to 500 lb, 70.00c; under 100 lb, 73.00c; f.o.b. Cleveland.

Nickel Chloride: 100-lb kegs, 29.50c; 400-lb bbl. 27.50c up to 10,000 lb, 27.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on barrels, or 4 or more kegs.

Tin Anodes: Bar, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb. nom.; ball, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; f.o.b. Sewaren, N. J.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers nom.; 100 or 300 lb drums only, 100 to 500 lb, nom.; 600 to 1900 lb, nom.; 2000 to 9900 lb, nom.; f.o.b. Sewaren, N. J. Freight not exceeding St. Louis rate allowed.

Zinc Cyanide: 100 lb drums, less than 10 drums 46.8c, 10 or more drums 44.8c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb nom.; more than 2000 lb, nom., f.o.b. Carteret, N. J.

Stannous Chloride (Anhydrous): In 400 lb bbl, nom.; 100 lb kegs nom., f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 15,000 lb, f.o.b. shipping point.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	21.50	21.25	20.75
Yellow Brass	19.125	18.875	17.875
Commercial Bronze			
95%	20.50	20.25	19.75
90%	20.50	20.25	19.75
Red brass			
85%	20.25	20.00	19.50
80%	20.125	19.875	19.375
Muntz metal	18.125	17.875	17.375
Nickel, silver, 10%	21.25	21.00	10.625
Phos. bronze, A	22.625	22.375	21.375

BRASS INGOT MAKERS' BUYING PRICES

(Cents per pound, delivered eastern refineries, carload lots)

No. 1 copper 21.75; No. 2 copper 20.75; light copper 19.75; composition red brass 18.75; radiators 15.50; heavy yellow brass 14.25.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 21.75; No. 2 copper 20.75; light copper 19.75; refinery brass (60% copper) per dry copper content 20.00.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 20.25-20.50; No. 2 19.25-19.50; light copper 17.75-18.00; No. 1 composition red brass 16.25-16.50; No. 1 composition turnings 16.75-17.00; mixed brass turnings 10.50-10.75; new brass clippings 16.50-16.75; No. 1 brass rod turnings 15.25-15.50; light brass 10.50-10.75; heavy yellow brass 12.00; new brass rod ends 15.50-15.75; auto radiators, unsweated 13.75-14.00; cocks and faucets, 14.75-15.00; brass pipe 15.75-16.00.

Lead: Heavy 13.75-14.00; battery plates 8.75-9.00; linotype and stereotype 15.00-15.25; electrotype 13.25-13.50; mixed babbitt 12.75-13.00.

Zinc: Old zinc 11.00-11.25; new die cast scrap 10.75-11.00; old die cast scrap 8.00-8.25.

Tin: No. 1 pewter 55.00-57.00; block tin pipe 75.00-77.00; No. 1 babbitt 50.00-52.00.

Aluminum: Clippings 2S 14.00; old sheets 11.00; crankcase 11.00; borings and turnings 7.50.

DAILY PRICE RECORD

1950	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Sept. 20-21	22.50-24.50	15.80	17.50	102.50	17.50	32.00	48.00	72.75
Sept. 18-19	22.50-24.50	15.80	17.50	101.00	17.50	32.00	48.00	72.75
Sept. 14-16	22.50-24.50	15.80	17.50	103.00	17.50	32.00	48.00	72.75
Sept. 13	22.50-24.50	15.80	17.50	102.00	17.50	32.00	48.00	72.75
Sept. 12	22.50-24.50	15.80	17.50	101.25	17.50	32.00	48.00	72.75
Sept. 11	22.50-24.50	15.80	17.50	100.50	17.50	32.00	48.00	72.75
Sept. 8-9	22.50-24.50	15.80	17.50	99.00	17.50	28.50	48.00	72.75
Sept. 7	22.50-24.50	14.80	17.50	99.00	17.50	28.50	48.00	72.75
Sept. 6	22.50-24.50	14.80	15.00	97.50	17.50	28.50	48.00	72.75
Sept. 5	22.50-24.50	14.80	15.00	95.50	17.50	28.50	48.00	72.75
Sept. 1-2	22.50-24.50	14.80	15.00	97.50	17.50	28.50	48.00	72.75
Aug. Avg.	22.870	12.726	15.00	102.12	17.50	24.648	48.00	72.75
Aug. 31	22.50-24.50	13.80	15.00	98.50	17.50	28.50	48.00	72.75
Aug. 30	22.50-24.50	13.80	15.00	99.50	17.50	24.50	48.00	72.75
Aug. 28-29	22.50-24.50	13.80	15.00	102.00	17.50	24.50	48.00	72.75
Aug. 25-26	22.50-24.50	13.80	15.00	104.50	17.50	24.50	48.00	72.75
Aug. 24	22.50-24.50	13.80	15.00	104.00	17.50	24.50	48.00	72.75
Aug. 23	22.50-24.50	13.80	15.00	102.50	17.50	24.50	48.00	72.75
Aug. 22	22.50-24.50	13.80	15.00	106.00	17.50	24.50	48.00	72.75

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

IRON AND STEEL SCRAP

Consumer prices, except as otherwise noted, including brokers commissions, as reported to STEEL, Sept. 21, 1950; gross tons
Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Sept. 21	$40.58
Sept. 14	41.08
Aug. 1950	40.00
Sept. 1949	26.07
Sept. 1945	19.17

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

No. 1 Heavy Melt.	$44.00
No. 2 Heavy Melt.	41.00
No. 1 Busheling	44.00
No. 1 Bundles	44.00
No. 2 Bundles	39.00
Heavy Turnings	43.00-44.00
Machine Shop Turnings	*33.00-34.00†*
Mixed Borings, Turnings	*33.00-34.00†*
Short Shovel Turnings	36.50-37.00*
Cast Iron Borings	35.50-36.00
Low Phos. Steel	48.00-49.00

Cast Iron Grades

No. 1 Cupola Cast	45.00-46.00
No. 1 Machinery Cast	50.00-51.00
Charging Box Cast	43.00-44.00
Heavy Breakable Cast	41.00-42.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	*44.00*
Rails, Random Lengths	*49.50-50.00*
Rails, 2 ft. and under	*52.50-53.50*
Rails, 18 in. and under	*53.00-54.00*
Railroad Specialties	*52.50-53.00*

† Crushers' buying prices.
* Nominal.

CLEVELAND

No. 1 Heavy Melt. Steel	*$42.50-43.50*
No. 2 Heavy Melt. Steel	37.00-37.50
No. 1 Busheling	*42.50-43.50*
No. 1 Bundles	*42.50-43.50*
No. 2 Bundles	31.00-32.00
Machine Shop Turnings	*29.00-30.00*
Mixed Borings, Turnings	*32.50-33.50*
Short Shovel Turnings	33.00-33.50
Cast Iron Borings	33.00-33.50
Low Phos.	*46.00-47.00*

Cast Iron Grades

No. 1 Cupola	52.00-53.00
Charging Box Cast	46.00-47.00
Stove Plate	44.00-45.00
Heavy Breakable Cast	43.00-44.00
Unstripped Motor Blocks	36.00-37.00
Brake Shoes	40.00-41.00
Clean Auto Cast	54.00-55.00
No. 1 Wheels	46.00-47.00
Burnt Cast	41.00-42.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	43.00-44.00
R.R. Malleable	*60.00-62.00*
Rails, 3 ft and under	*61.00-63.00*
Rails, 18 in. and under	*63.00-64.00*
Rails, Random Lengths	*56.00-58.00*
Cast Steel	48.00-49.00
Railroad Specialties	49.00-50.00
Uncut Tires	*54.00-56.00*
Angles, Splice Bars	*57.00-59.00*

VALLEY

No. 1 Heavy Melt. Steel	$43.50-44.00
No. 2 Heavy Melt. Steel	39.50-40.00
No. 1 Bundles	43.50-44.00
Facty. Prod. Bundles	43.50-44.00
No. 2 Bundles	34.00-34.50
Machine Shop Turnings	34.00-34.50
Short Shovel Turnings	36.00-36.50
Cast Iron Borings	36.00-36.50
Low Phos.	46.00-46.50

Railroad Scrap

No. 1 R.R. Heavy Melt.	43.50-44.00

PHILADELPHIA

No. 1 Heavy Melt. Steel	*$37.50-38.00*
No. 2 Heavy Melt. Steel	*34.50-35.00*
No. 1 Busheling	*36.50*
No. 1 Bundles	*37.50-38.00*
No. 2 Bundles	*30.50-31.00*
Machine Shop Turnings	*27.50-28.00*
Short Shovel Turnings	*30.50-32.00*
Mixed Borings, Turnings	*25.50-26.00*
Low Phos. Punchings and Plate, elec. fur. grade	*45.00-46.00*
Low Phos. Plate, 5 ft & Under	*45.00-46.00*
Elec. Furnace Bundles	*41.00-42.00*
Heavy Turnings	*38.00*
No. 1 Chemical Borings	39.00
Knuckles and couplers	*47.00-47.50*
Steel car wheels	*46.00-47.00*

Cast Iron Grades

No. 1 Cupola Cast	*40.50-41.00*
No. 1 Machinery Cast	*44.00-45.00*
No. 1 Yard Cast	*39.00-41.00*
Charging Box Cast	*39.00-40.00*
Heavy Breakable Cast	*39.00-40.00*
Clean Auto Cast	46.00
No. 1 Wheels	46.00-47.00
Malleable	52.00-53.00

CINCINNATI

No. 1 Heavy Melt. Steel	*$41.00*
No. 2 Heavy Melt. Steel	*35.00*
No. 1 Busheling	*41.00*
No. 1 Bundles	*41.00*
No. 1 Black Bundles	*35.00*
No. 3 Bundles	26.00
Machine Shop Turnings	25.00
Short Shovel Turnings	28.00
Mixed Borings, Turnings	27.00
Cast Iron Borings	28.00

Cast Iron Grades

No. 1 Cupola Cast	55.00
Charging Box Cast	46.00
Stove Plate	38.00
Heavy Breakable Cast	*44.00*
Unstripped Motor Blocks	32.00
Brake Shoes	31.00
Clean Auto Cast	55.00
Drop Broken Cast	57.50
Low Phos., 18 in. and under	53.50

Railroad Scrap

No. 1 R.R. Heavy Melt.	44.00
R.R. Malleable	48.00
Rails, Rerolling	*54.00*
Rails, Random Lengths	50.00
Rails, 18 in. and under	60.00

DETROIT

(Brokers' buying prices, f.o.b. shipping point)

No. 2 Heavy Melt. Steel	$30.00-31.00
No. 1 Bundles	37.00-37.50
No. 2 Bundles	29.00-30.00
No. 1 Busheling	37.00-37.50
Machine Shop Turnings	25.00-25.50
Forge Flashings	37.00-37.50
Short Shovel Turnings	27.00-27.50
Cast Iron Borings	27.00-27.50
Punchings & Plate Scrap	39.00-40.00

Cast Iron Grades

No. 1 Cupola Cast	42.00-43.00
Heavy Breakable Cast	35.00-36.00
Clean Auto Cast	45.00-46.00

BUFFALO

No. 1 Heavy Melt. Steel	$41.00-42.00
No. 2 Heavy Melt. Steel	*38.00-38.50*
No. 1 Busheling	*38.00-38.50*
No. 1 Bundles	*39.00-39.50*
No. 2 Bundles	*36.00-36.50*
Machine Shop Turnings	30.00-30.50
Mixed Borings, Turnings	30.00-30.50
Cast Iron Borings	30.00-30.50
Short Shovelings	32 00-32.50
Low Phos.	*42.00-43.00*

Cast Iron Grades

No. 1 Cupola	38.50-39.00
No. 1 Machinery	41.00-42.00
Malleable	36.00-37.00

Railroad Scrap

Rails, 2 ft. and under.	49.00-50.00
Rails, random size	44.00-45.00
Railroad Specialties	42.00-43.00

NEW YORK

(Brokers' buying prices f.o.b. shipping point)

No. 1 Heavy Melt. Steel	*$33.00*
No. 2 Heavy Melt. Steel	28.00-29.00
No. 1 Busheling	29.00-30.00
No. 1 Bundles	*33.00*
No. 2 Bundles	27.00-28.00
Machine Shop Turnings	23.00-24.00
Mixed Borings, Turnings	*22.00-22.50*
Short Shovel Turnings	*24.00*
Punchings & Plate Scrap	36.00-37.00
Low Phos. Plate, 5 ft & under	36.00-37.00
Elec. Furnace Bundles	35.00-36.00

Cast Iron Grades

No. 1 Cupola Cast	33.00-34.00
No. 1 Machinery	35.00-36.00
Charging Box Cast	31.00-32.00
Heavy Breakable	*30.00-31.00*
Unstripped Motor Blocks	*25.00-25.50*

BOSTON

(F.o.b. shipping point)

No. 1 Heavy Melt. Steel	$32.00
No. 2 Heavy Melt. Steel	*26.00-26.50*
No. 1 Bundles	32.00
No. 1 Busheling	31.00-32.00
Machine Shop Turnings	23.00-23.50
Short Shovel Turnings	*23.00-23.50*
Mixed Borings, Turnings	*24.00-24.50*
Bar Crops and Plate	37.00-38.00
Punchings & Plate Scrap	37.00-38.00
Chemical Borings	29.00-30.00

Cast Iron Grades

No. 1 Cupola Cast	*33.00-33.50*
Mixed Cast	*32.00-32.50*
Heavy Breakable Cast	29.00-30.00
Stove Plate	*31.00-31.50*

CHICAGO

No. 1 Heavy Melt. Steel	$40.00
No. 2 Heavy Melt. Steel	38.00
No. 1 Bundles	40.00
No. 2 Bundles	34.00-35.00
Machine Shop Turnings	28.00-29.00*
Mixed Borings, Turnings	28.00-29.00*
Short Shovel Turnings	28.00-30.00*
Cast Iron Borings	28.00-30.00
Low Phos.	*46.00-47.00†*
Elec. Furnace Bundles	40.00-41.00
Heavy Turnings	37.00-38.00
Cut Structurals	44.00-45.00

Cast Iron Grades

No. 1 Cupola Cast	*50.00-51.00*
Clean Auto Cast	*50.00-51.00*
No. 1 Wheels	41.00-42.00
Stove Plate	41.00-42.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	40.00*
Malleable	56.00-57.00
Rails, Rerolling	59.00-60.00
Rails, Random Lengths	54.00-55.00
Rails, 2 ft and under	59.00-60.00
Rails, 18 in. and under	60.00-61.00
Railroad Specialties	49.00-50.00
Angles, Splice Bars	53.00-54.00

* Nominal.
† Brokers buying price.

BIRMINGHAM

No. 1 Heavy Melt. Steel	*$34.50-35.50*
No. 2 Heavy Melt. Steel	*31.00-32.00*
No. 1 Busheling	*31.00-32.00*
No. 2 Bundles	*29.00-30.00*
Machine Shop Turnings	27.00-28.00
Mixed Borings, Turnings	23.00-24.00
Short Shovel Turnings	27.00-28.00
Cast Iron Borings	27.00-28.00
Bar Crops and Plate	41.00-42.00
Cut Structurals	41.00-42.00

Cast Iron Grades

No. 1 Cupola Cast	*51.00-52.00*
Stove Plate	*46.50-47.50*
No. 1 Wheels	37.00-38.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	*40.00-41.00*
R.R. Malleable	nominal
Rails, Rerolling	48.00-49.00
Rails, 3 ft and under	48.00-49.00
Angles and Spice Bars	47.00-48.00

ST. LOUIS

No. 1 Heavy Melt. Steel	$39.00-40.00
No. 2 Heavy Melt. Steel	36.00-37.00
No. 1 Bundles	39.00-40.00
No. 2 Bundles	34.00-35.00
Machine Shop Turnings	*27.00-28.00*
Short Shovel Turnings	30.00-31.00

Cast Iron Grades

No. 1 Cupola Cast	45.00-46.00
Charging Box Cast	39.00-40.00
Heavy Breakable Cast	39.00-40.00
Brake Shoes	44.00-45.00
Clean Auto Cast	45.00-46.00
Burnt Cast	38.00-39.00

Railroad Scrap

R.R. Malleable	53.00-55.00
Rails, Rerolling	57.00-58.00
Rails, Random Lengths	51.00-53.00
Rails, 2 ft and under	56.00-58.00
Uncut Tires	46.50-47.50
Angles, Splice Bars	53.00-54.00
Railroad Specialties	49.00-50.00

SAN FRANCISCO

No. 1 Heavy Melt. Steel	$23.50
No. 2 Heavy Melt. Steel	21.50
No. 1 Bundles	23.50
No. 2 Bundles	21.50
No. 3 Bundles	16.50
Machine Shop Turnings	9.00
Low phos, electric	37.50

Cast Iron Grades

No. 1 Cupola Cast	44.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	23.50
Rails, Random Lengths	23.50

SEATTLE

No. 1 Heavy Melt. Steel	$24.00
No. 2 Heavy Melt. Steel	24.00
No. 1 Busheling	21.50
Nos. 1 & 2 Bundles	22.00
No. 3 Bundles	18.00
Machine Shop Turnings	15.00
Mixed Borings, Turnings	15.00
Punchings & Plate Scrap	30.00-32.50
Cut Structurals	30.00-32.50

Cast Iron Grades

No. 1 Cupola Cast	30.00-35.00
Heavy Breakable Cast	30.00
Stove Plate	25.00-27.50
Unstripped Motor Blocks	30.00
Malleable	30.00
Brake Shoes	30.00
Clean Auto Cast	35.00
No. 1 Wheels	32.50

Railroad Scrap

No. 1 R.R. Heavy Melt	25.00
Railroad Malleable	30.00
Rails, Random Lengths	26.00
Angles and Splice Bars	25.00

LOS ANGELES

(F.o.b. car, Los Angeles)

No. 1 Heavy Melt. Steel	$23.50
No. 2 Heavy Melt. Steel	21.50
Nos. 1 & 2 Bundles	19.50
No. 3 Bundles	16.50
Machine Shop Turnings	12.00
Mixed Borings, Turnings	8.00
Punchings & Plate Scrap	44.50

Cast Iron Grades

No. 1 Cupola Cast	42.80

Railroad Scrap

No. 1 R.R. Heavy Melt.	23.50
Rails, Rerolling	39.50

HAMILTON, ONT.

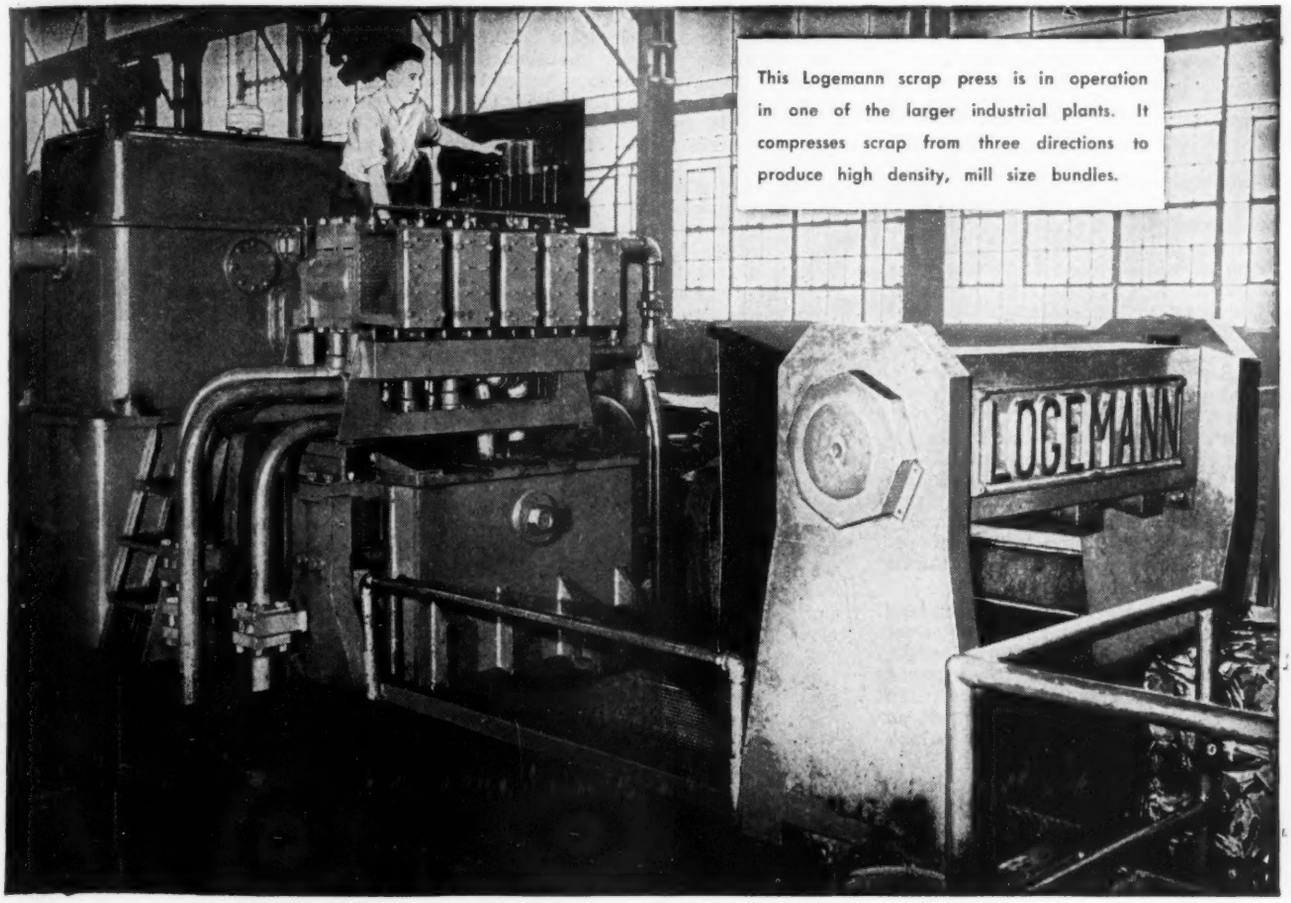
(Delivered prices)

Heavy Melt.	$30.00
No. 1 Bundles	30.00
Mechanical Bundles	28.00
Mixed Steel Scrap	28.00
Mixed Borings, Turnings	23.00
Rails, Remelting	30.00
Rails, Rerolling	33.00
Busheling	24.50
Bushelings new factory, prep'd	28.00
Bushelings new factory, unprep'd	23.00
Short Steel Turnings	23.00

Cast Iron Grades

Cast	40.00-43.00*

* F.o.b. shipping point.



This Logemann scrap press is in operation in one of the larger industrial plants. It compresses scrap from three directions to produce high density, mill size bundles.

Self-contained.....
Triple Compression..
Automatically Controlled

LOGEMANN SCRAP PRESSES

handle high tonnages with minimum labor . . . at low cost!

LOGEMANN METAL BALERS

. . . are built in a large range of sizes to meet specific conditions. Let Logemann's engineering service help you arrive at the most efficient and economical way of handling your scrap.

The compact unit illustrated is completely self-contained with oil tank and pump located directly over the press . . . utilizing the advantages of short pipe lines. Automatic controls, mounted in front of pump, give the operator full visibility at all times. Controls operate rams successively within a single rigid box. There is no complex construction which means there is *no need for specially-trained maintenance crews.*

Both two-ram and three-ram models are available with automatic controls or for manual manipulation.

Logemann Bros. Co. have specialized in the production of scrap metal presses for sheet mills, stamping plants, scrap yards, and metal manufacturing plants of all types for nearly 75 years. Write for full information—please state the nature of your scrap and tonnage.

LOGEMANN BROTHERS COMPANY
3164 W. Burleigh Street • Milwaukee 10, Wisconsin

Sheets, Strip . . .

Sheet and Strip Prices, Page 103 & 104

Philadelphia—Until armament requirements are clarified confusion in distribution will continue. Moderate military inquiries thus far include relatively high ratio of flat rolled steel and they are mounting. With producers booked solidly through the balance of the year, what goes for armament will be at the expense of these old orders. Beyond November little sheet or strip tonnage has been scheduled.

Some tonnage has been blanked out for September and October on hot-rolled carbon, also cold-rolled.

Steel supplied and promised consumers for defense contracts is charged against their normal allocation, there being no ex-quota tonnage. More fabricators of finished goods from flat-rolled steel are dangerously low on inventory and will need additional tonnage soon if operations are to be maintained.

Boston — Revisions in sheet and strip schedules for fourth quarter are prevalent even before rolling starts for that period. End result points toward less steel for civilian goods. In some cases changes in cold-rolled schedules are due to lack of balance in not-rolled.

New York—Volume of flat-rolled backed up for scheduling in December is far in excess of open capacity. Reduction of 10 percent in allocation of all products for December by one leading interest, includes electrical and stainless. Policing distribution of flat-rolled against diversion to gray market is being intensified.

Pittsburgh—Scheduled resumption of openhearth and sheet operations at the former Toronto, O., plant of Follansbee Steel Corp., and rumored similar development at Hudson Motor Car's New Castle, Pa., hand mill facilities are further indications the unbalanced demand-supply situation will prevail in sheets and strip through most of next year.

Mill allotments for October and November have been substantially curtailed and still larger cutbacks are indicated for December. Sellers do not expect governmental distribution controls until after election and likely will not be operative on shipments this year.

Cleveland — No marked change in sheet supply conditions is expected as result of inventory control regulations, except for possibly some curtailment of buying activity in the conversion market. Consumer inventories have been limited for months past by supply shortages and with the mills allotting tonnage to customers on quotas based on historical buying pattern there is little possibility for hoarding. A significant development is intensified effort by the mills to keep close control over tonnage leaving their mills so that none of it is diverted to the gray market.

Cincinnati — Armco Steel Corp. schedules for October are set up, but none so far for November and December. This stems from uncertainty about high-priority needs. Military requirements are steadily growing. Carryover will be extensive.

Chicago—NPA's inventory control regulation is unlikely to produce any tangible increase in amount of steel available for distribution. Except for isolated cases metalworking plants do not have "excessive" stocks. Although galvanized sheet extra cards provide for automatic price changes with change in the zinc prive level, producers now state much of their zinc is acquired at premium prices, not official quotations. Thus, despite high galvanized sheet output this item's production cost is higher than extra cards allow for. There is no indication, however, that price changes are in the offing.

St. Louis — Sheet producers are under increased pressure since imposition of inventory controls. Mills are taking no action toward reducing quotas pending clarification of the situation. Military priority orders are few in this district. Fabricators generally have no more than 90 days' sheet supplies; many much less. Output at Granite City Steel Co. has been off slightly, due to installation work on new equipment.

Birmingham — Light rolled products are scarce. An already tight situation is getting tighter without reference to defense needs.

San Francisco—Tightness in sheets and strip is worsening. Many large users who have been eating into stockpiles are fighting a losing battle to keep stocks equal to production of finished goods.

Steel Bars . . .

Bar Prices, Page 103

Boston—Armament contracts are reflected heaviest in forgings, and bar requirements will be filled where order details warrant. In some cases tonnage will come out of regular allocations. Carbon bar capacity is filled for fourth quarter and for armament some tonnage is taken for first.

New York—Revisions in nickel alloy bar specifications are more frequent due to shortage of nickel. Electric furnace production is hampered by lack of nickel scrap. Carryovers on carbon bars next quarter will be heavy. While some cold-drawn capacity is scheduled through December, other producers have not set up programs beyond November.

Philadelphia—Capacity is sold for balance of the year, but scheduling for next quarter is fraught with factors pointing to numerous revisions, substitutions for high nickel and chromium alloys, new armament tonnage and specification changes. Electric furnace alloy production is hampered by shortage of nickel scrap.

Armament tonnage will frequently displace more than equal volume of regular carbon because of annealing cycles. Carbon bar allocations, both hot and cold rolled, are lower in some cases with cold-finished scheduling somewhat beyond that for hot-rolled. New orders taken for next quarter will be confined mostly to defense requirements.

Pittsburgh — Producers here have not followed Timken in advancing alloy bars 5 per cent. Some alloy sellers have accepted order commitments into first quarter but delivery promises will be subject to developments in respect to extent of military demand.

Cleveland—Tight supply conditions in merchant bars promise to worsen over coming months. The mills are sold out over remainder of the year and any military or related orders that develop will be accommodated at the expense of civilian accounts. Heavy carryover from third quarter will mean that considerable fourth quarter production will go to care for the overflow. As a result overflow into the first quarter of 1951 promises to be substantial.

Chicago—Tightness in carbon and alloy bars is expected to increase next quarter. Some major alloy bar consumers have been notified their receipts will be drastically reduced, and in one case, completely suspended, in November or December. Cold finishers are unable to make headway in closing the demand-supply gap.

Plates . . .

Plate Prices, Page 103

New York—Contributing to tightness in plates is lack of semifinished steel for rolling. More semifinished for plate mills rather than conversion of sheet mills to plate production is gaining favor in some directions. For months ahead some mills are committed on large tonnages for electric welded pipe and the plate pool remaining for general distribution is steadily narrowing. Fabricating shops are operating on a touch-and-go inventory basis.

Boston — Demand for plates exceeds supply with inventories down, notably in lighter gages. This tends to limit volume booked by tank shops. Floor plates and clad material demand is increasing. More clad plates are being utilized in pulp and paper manufacture.

Philadelphia—Hard pressed to meet commitments some plate mills are only beginning to schedule for November, although capacity is taken for balance of the year. Demand is unabated, but little new tonnage is booked. Heaviest demand for freight car building is expected in first quarter. Floor plates are in strong demand, substituting for carbon plates.

Structural fabricating shops are experiencing more difficulty in obtaining plates than shapes. For general distribution, tonnage is narrowing with volume earmarked for large diameter pipe, railroad cars and integrated plate fabricating shops. Latter are taking a larger chunk of production which is also hit by loss of one unit down for repairs.

Chicago — Plate quotas for fourth quarter may be subject to revision. One producer has not yet notified consumers of December allotments. Freight car builders will get preferential treatment from one producer, quotas being based on tonnage received under the OIC voluntary allocation plan.

Birmingham—The hue and cry for plates gets more insistent. If defense needs increase there will be even less tonnage for regular users since defense needs will get preferred attention.

San Francisco—Scarcity of plates is increasing, especially light gages.

Seattle — Plate shops have small backlogs and are handicapped by the scarcity of plates and sheets. Considerable tonnage is involved in military installation jobs in Alaska.

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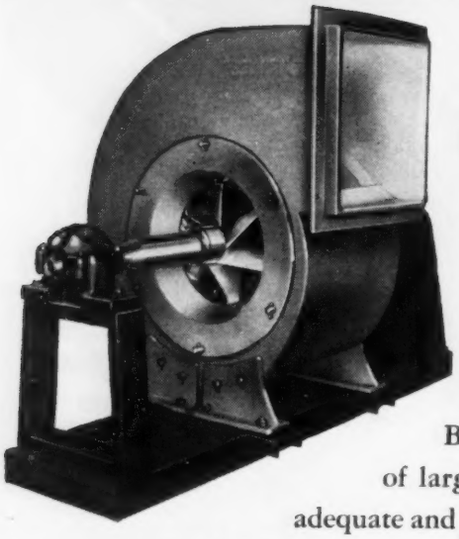

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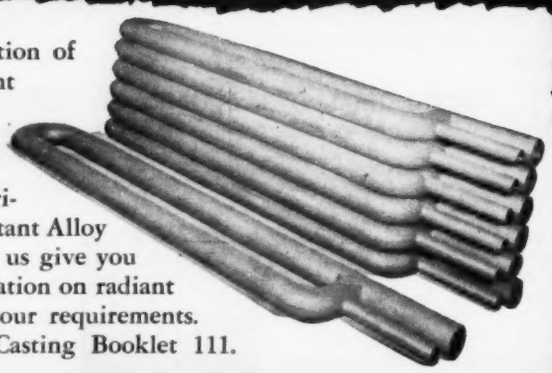


Pig Iron . . .

Pig Iron Prices, Page 102

Cleveland — Three merchant iron producers last week raised prices $3 per ton. Other interests are expected to take similar action.

Republic Steel Corp. on Sept. 21 effected an advance on basic, malleable and No. 2 foundry, at Buffalo and Cleveland, while Hanna Furnace Co. raised its prices at Buffalo. Youngstown Sheet & Tube Co. also effected increases.

Stringency in pig iron supply is increasing. Foundries are seeking larger tonnage to care for heavier melting operations. Shortage of coke is hampering foundry activity to some extent but this is not reflected in any diminution of pressure for iron. Indicative of the tight supply situation is the fact that an increasing number of midwest buyers are paying $48 to $52, seaboard, for imported iron.

Imposition of government inventory controls is not expected to have any particular effect on market conditions. Foundry stocks are limited and with sellers parcelling out available tonnage based on the historical pattern of sales there is little chance consumers will be able to build excessive inventories.

Boston—Foundry melt is slightly higher, but consumers are buying pig iron conservatively in line with backlogs. Possibility of higher prices in fourth quarter has brought out few additional shipping releases.

New York—Foundry melt tends to move upward with pig iron supply limited. Inventories are below normal. Limited supply of iron hampers efforts of some shops to increase ratio of iron to scrap in melts.

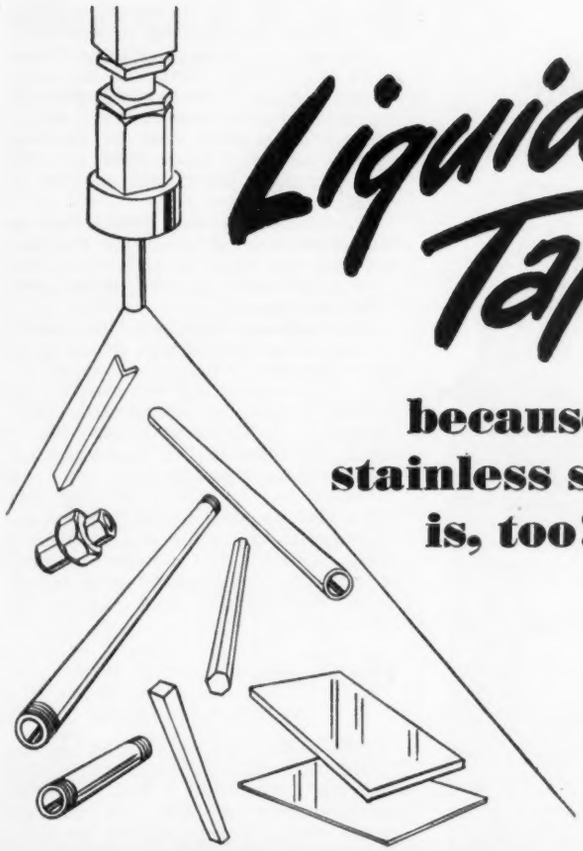
Buffalo—Two of the leading merchant iron producers in the area announced a $3 increase in prices, but the action was not followed immediately by other sellers. The boost was attributed to a recent increase in overall operating costs. Meanwhile, the rush for iron gains momentum.

Philadelphia—Melt is heavier with foundries, notably jobbing shops, operating near capacity. Pig iron supply is tightening. One integrated producer is not accepting new orders. Advance in price of $3 initiated by three midwest producers will probably be followed or equalized by district furnaces.

Pittsburgh—Steel producers and foundries are seeking lower rail freight on imported basic and foundry iron from Baltimore and other eastern ports. It is hoped $6.50 per gross ton eventually will be allowed from Baltimore, although railroad recommendations call for a $7.50 rate compared with the current charge of $8.75.

Westinghouse Air Brake ordered about 1000 tons of Austrian iron, Shenango Furnace Co., closer to 5000 tons and U. S. Steel has or soon will make commitments for nearly 100,000 tons. Steel interests in Youngstown have made commitments in excess of 15,000 tons of foreign pig iron.

Cincinnati—Shipments from southern furnaces are heavier than early



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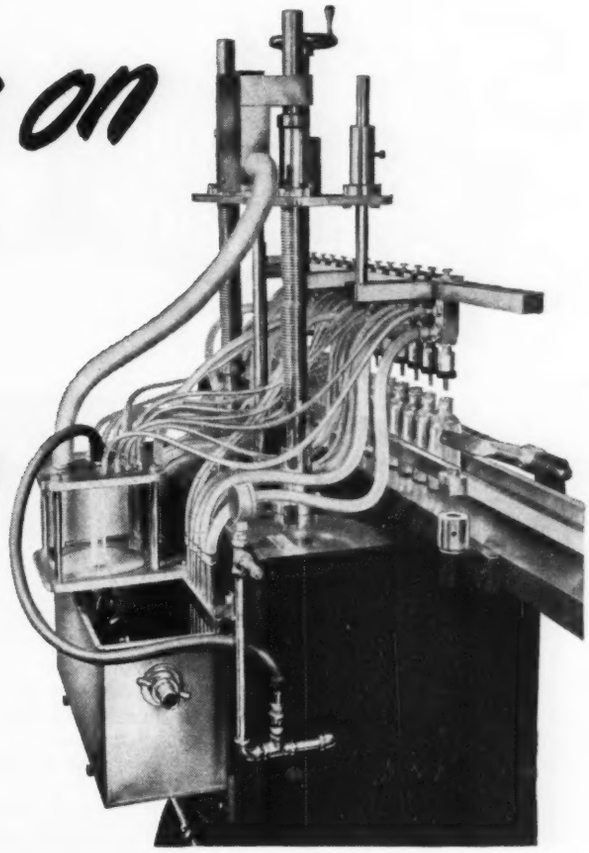

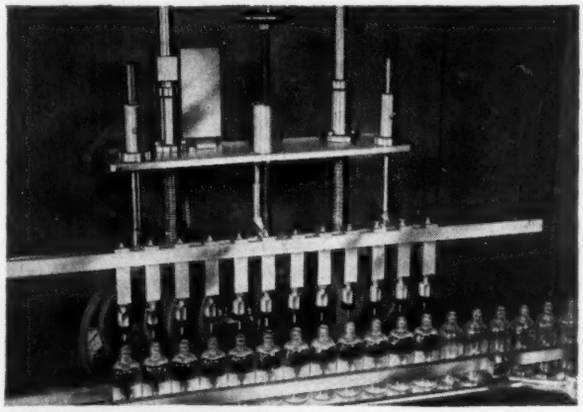

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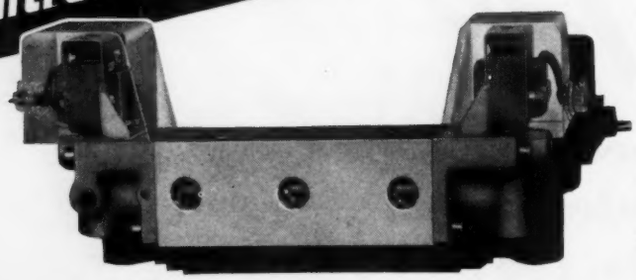

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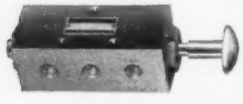

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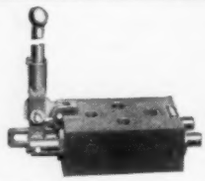

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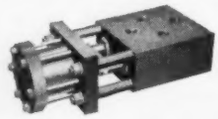

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this year, but the increased tonnage falls short of satisfying melters.

Chicago — Carnegie-Illinois closed down No. 7 blast furnace at the Gary Works preparatory to enlarging its capacity. Hearth diameter will be increased from 26½ feet to 28 feet, upping capacity from 1240 to 1300 tons per day. Work will require 70 days.

St. Louis—Pig iron production in this district is off slightly. Foundry demand continues to pick up. Producers estimate melters' inventories at 30 to 60 days.

Birmingham—Merchant iron melters describe the supply situation in pig iron as "terrific." Woodward Iron Co. has started construction of a blast furnace at Woodward. With exception of Republic Steel's No. 2 stack at Thomas, all furnaces are producing at capacity.

Seattle — Importers of pig iron from Europe are finding it more advantageous to handle full cargo lots than parcels. A Canadian steamer is reported chartered to load pig at Antwerp-Rotterdam for North Pacific ports.

Tin Plate . . .

Tin Plate Prices, Page 104

Pittsburgh—No significant change in tin plate distribution is anticipated through November and possibly through rest of year for military needs are not expected to be large throughout this period. Tin conservation is not of such prime importance as was the case in World War II. Of more immediate concern is availability of cold-reduced coils.

Wire . . .

Wire Prices, Page 105

New York—With deliveries extended three to four months on some specialties, wire mills are accepting first quarter orders and are well advanced in that period on some products requiring long-processing. There is no slackening in demand. More products are allocated for next quarter. Some products, inclined to lag behind the parade until recently, are again under pressure, music wire included.

Pittsburgh—At least one producer is sold through April on nails and well into first quarter on other merchant and manufacturers' wire items. Order backlogs are subject to drastic adjustments when specific military needs appear. Production schedules among nonintegrated interests are adversely affected by wire rod scarcity. Jobbers' stocks are below desired levels.

Cleveland—Wire consumers are finding it increasingly difficult to cover requirements with the mills sold out on virtually all products into first quarter. Supply conditions are adversely affected by a wildcat strike at two local works of the American Steel & Wire Co. Loss in production amounts to 2000 tons of cold finished bar stock and 2200 tons of strip, rods and wire daily.

Birmingham—All specifications in wire are scarce, especially nails due to a generally active construction program. Baling wire, fencing and other items are in strong demand.

Tubular Goods . . .

Tubular Goods Prices, Page 106

Pittsburgh — Seeking to prevent growth of a gray market in tubular products, Spang-Chalfant Division, National Supply Co. is requesting jobbers to direct all shipment receipts into proper consuming channels fairly and equitably and to report any instances of diversion. Company also requests consumers not to order more products than are needed for current requirements and not to offer tubular steel for resale. In instances of diverting steel contrary to this policy National Supply will reject further orders from offenders. Other pipe producers have or soon will adopt a similar policy, some going so far as to ask customers to sign a contractual agreement to that effect.

Los Angeles—Heavy purchases by oil well suppliers and drillers has swept the market clean of supplies of tubing and casing. Dealers in a thriving gray market in tubular goods are quoting $3 per foot for 7-in. cast pipe that usually sells for $1.96 per foot. Small diameter tubing usually at 67 cents per foot is quoted $1.25 per foot.

Seattle—Demand for cast iron pipe is confined to small projects. Cast iron pipe deliveries now are extended to 180 days.

Structural Shapes . . .

Structural Shape Prices, Page 103

Boston—Additional bridge tonnage coming out for estimates shortly includes steel for the Arterial highway, Boston, and a Merrimac river span, Hunt's Falls, Mass. Bridge fabricating shops are booked well into second quarter 1951.

New York—Fabricated structural steel contracts for private construction are heavier. Some structural mills are four to five weeks behind schedule. For fabricated steel in place, prices are higher, but below postwar peak.

Philadelphia — Some structural shops, booked into April-May, are confronted with curtailment in operations late this year unless tonnage of plain material is increased.

Unwilling to add to backlogs under these circumstances, more shops are not estimating, being concerned over present commitments. One producer is blanking out November and allocations in other directions are reduced with some units four weeks and more behind schedules. Meanwhile volume of new work up for estimates is heavier with some industrial projects moved ahead of schedule, including several large electrical power plants, one in this area taking 10,000 tons.

Chicago — Even the most modest needs are filled with great difficulty. Some users find the best sources of steel are out-of-the-way shops in suburban or country locations. Not all interests have taken orders for December delivery.

San Francisco—Inquiries for structural shapes are rising. Fears of heavy diversion to military and defense projects are spurring attempts by fabricators to build inventories.

Seattle — Fabricating plants are

the most important Question about Chain:

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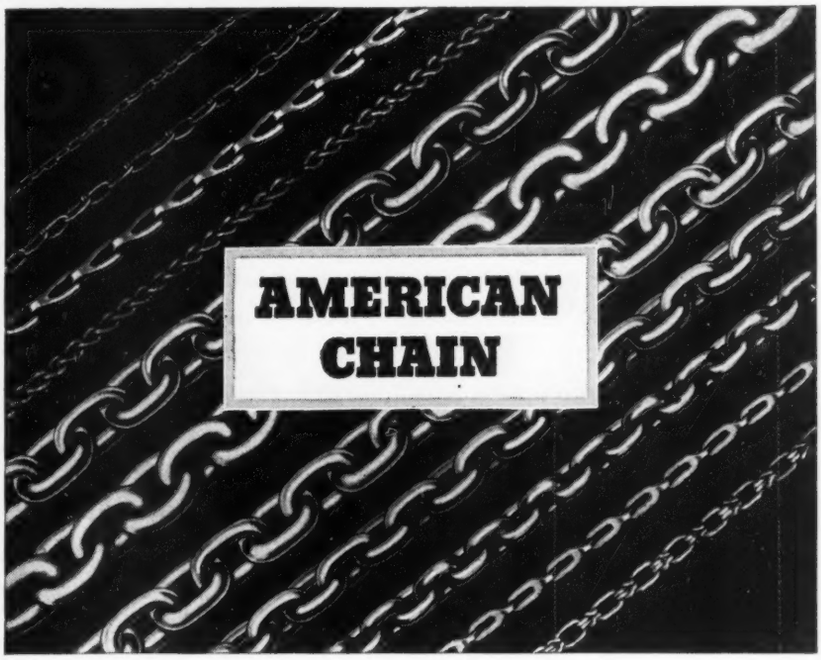

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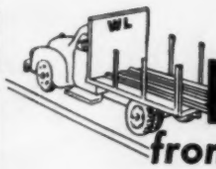

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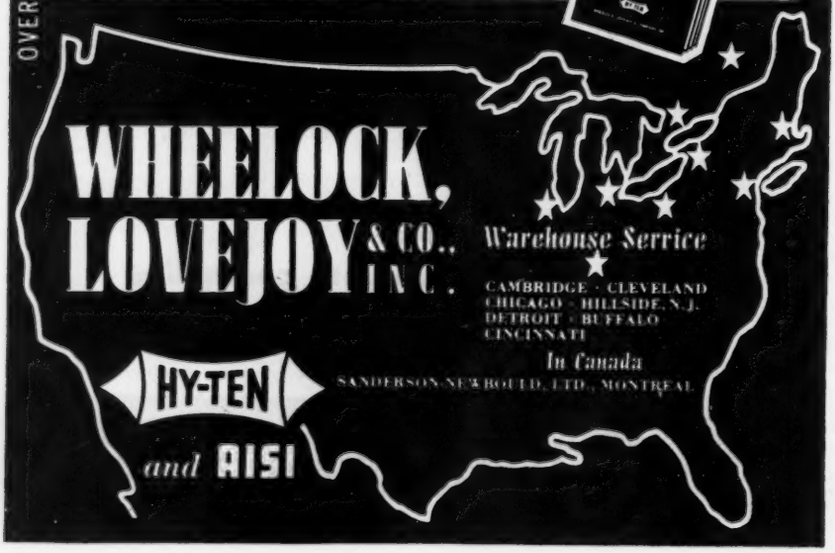


cramped by shortage of steel. Several major bridge jobs in Oregon and Washington, bids soon, involve considerable tonnages. Bethlehem Pacific Coast Steel Corp. is low to Seattle light department for 5300 tons for galvanized steel transmission towers.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 103

Boston—Concrete reinforcing bar distributors are turning away volume. Reductions in mill allocations come at a time inquiry is heavier and contractors experience difficulty in placing requirements. For the Sloan Metal Processing laboratory, M.I.T., Cambridge, United States Steel Supply Co. will furnish 400 tons.

Cincinnati—The Pollak Steel Co. increased reinforcing bars, fabricated, to consumers, 25 cents per 100 lbs to $4.75, base, Marion, O.

Los Angeles — Larger reinforcing bar producers are sold out for balance of the year. Smaller mills are booking on a month-to-month, price-in effect basis.

Seattle—Rolling mills are operating at capacity. Demand for reinforcing bars is strong. Merchant bars are being produced in increased volume.

Rails, Cars . . .

Track Material Prices, Page 105

New York—Domestic freight car orders totaled 24,280 units in August, including 9039 to be built in carriers' shops. This compares with 30,065 cars in July of which 10,575 are being built in railroad shops. Freight cars delivered in August totaled 5203 compared with 3464 in July. Backlog of cars on order Sept. 1 was 86,156 of which 32,471 are to be built in railroad shops, according to American Railway Car Institute. Backlog Aug. 1 was 67,084 cars and on Sept. 1, 1949, 28,731 units. New York Central ordered 1000 fifty-five-ton box cars in addition to 6000 ordered earlier and will recondition 3000 gondolas. Postwar orders for freight cars by this railroad total 42,673 units.

Pittsburgh—Indicative of growing freight car shortage one mill here has over 20,000 tons of finished steel awaiting delivery. The merchant foundry iron producer is 10 days behind on shipments. Similar situation prevails among some metalworking concerns.

Birmingham—L. & N. railroad has placed 1000 box cars with the Bessemer plant of Pullman Standard Car Mfg. Co.

Semifinished Steel . . .

Semifinished Prices, Page 103

Los Angeles—Western steel producers are straining to meet semifinished requirements. Columbia Steel Corp.'s combined ingot production at Pittsburgh and Torrance plants touched 120 per cent last week, highest ever recorded in the West. Additional steelmaking facilities at Bethlehem Pacific Steel Corp. boosted Bethlehem Pacific's annual rated ingot capacity 18.5 per cent.

Scrap . . .

Scrap Prices, Page 110

Buffalo — The inertia which has gripped the scrap market recently was broken last week when one leading mill bought approximately 25,000 tons at price advances of $2 a ton. The orders called for No. 2 heavy melting, busheling and bundles, both No. 1 and No. 2. Turnings were not included. The sales lifted No. 2 material to a range of $38-38.50. No. 1 bundles were $1 above that range.

Philadelphia—Steel scrap prices for the moment are stabilized with eastern Pennsylvania in line with $44 Pittsburgh for No. 1 heavy melting steel, $41 for No. 2, and $39 for No. 2 bundles. Pennsylvania railroad tonnage moved at so-called formula prices; also railroad bundles. German scrap is arriving steadily, an average of two boats weekly at Baltimore with considerable more tonnage to come. Nickel scrap is short and some producers of electric furnace alloys are prodding customers for scrap produced at the source.

Pittsburgh—Prices on open-hearth industrial grades of scrap are unchanged. One mill purchased a small tonnage of short shoveling turnings at $34 last week. Considerable tonnage at $37 orders still is outstanding. Machine shop and mixed turnings are weaker with crushers able to purchase material within the range of $33 to $34. Railroad heavy melting steel is off $1 to $2 on recent purchases to $44; specialties and rails are up about $1.

Cleveland—Mills appear to be satisfactorily stocked with scrap for the present and are not pressing the market for tonnage. The market on steelmaking grades is strong, however, with prices holding at the recently stabilized level. The foundry grades are very strong with prices tending upward under steadily rising demand from foundries which are increasing the scrap ratio in their melt as an offset to short pig iron supply.

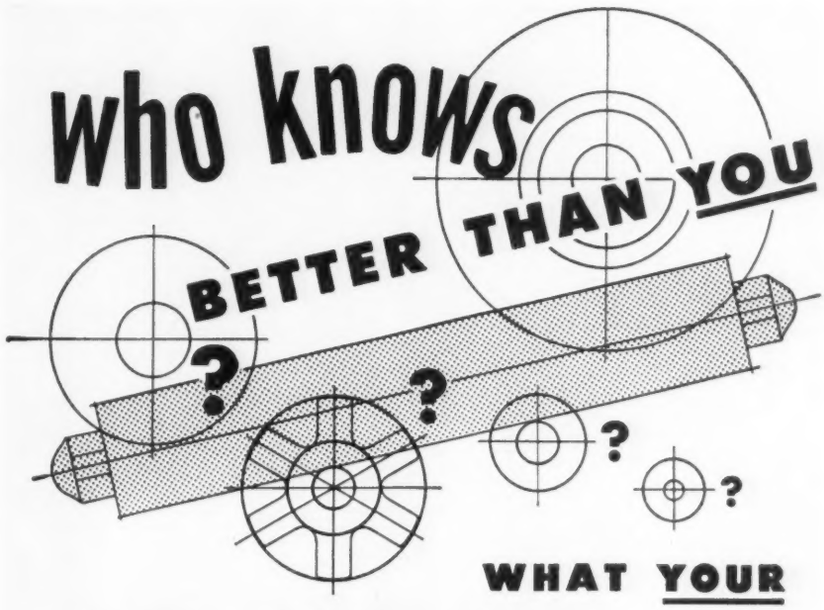
Detroit—Price line is holding although mills have extended old orders booked at higher prices indefinitely and have no serious objections to overshipments. Cast grades, borings and turnings are strong.

Cincinnati—Adjustment upward of $1 on heavy melting steel, busheling and bundles was deemed necessary in filling of new orders, but in the main the market on steelmaking grades is holding fairly well. The market for cast grades continues active with prices strong.

Chicago—Formula prices on major open-hearth grades are firmly entrenched. Exception is railroad scrap. Little interest is being shown by railroads in allocating scrap to mills at the $40 level. A small tonnage however, has moved at that price. Two prices may in time make their appearance on items which both mills and foundries use.

St. Louis—Scrap is marking time, with little material being offered. Dealer supplies are off sharply. Most mill and foundry stockpiles are under 60 days. Machine shop turnings, a limited demand item here, were marked down $2 last week.

Birmingham — Scrap market is strong with scattered price increases



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That's where Gorham rolls fit into your picture. We're completely equipped and qualified to fill your requirements in cold mill rolls, including working rolls, intermediate rolls, drive rolls and specials. *Your* specifications run the show. When you want ordinary commercial tolerances, that's what you get . . . and when you require extremely close tolerances, our experience, equipment and skilled personnel assure you precision, right on the "tenth".

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We invite you to join the list of operators *and* manufacturers of rolling mills whom we now serve. You'll find us a convenient and cooperative source for your roll requirements. Send us details of your rolling problems for recommendations, or your roll specifications for a prompt quotation.

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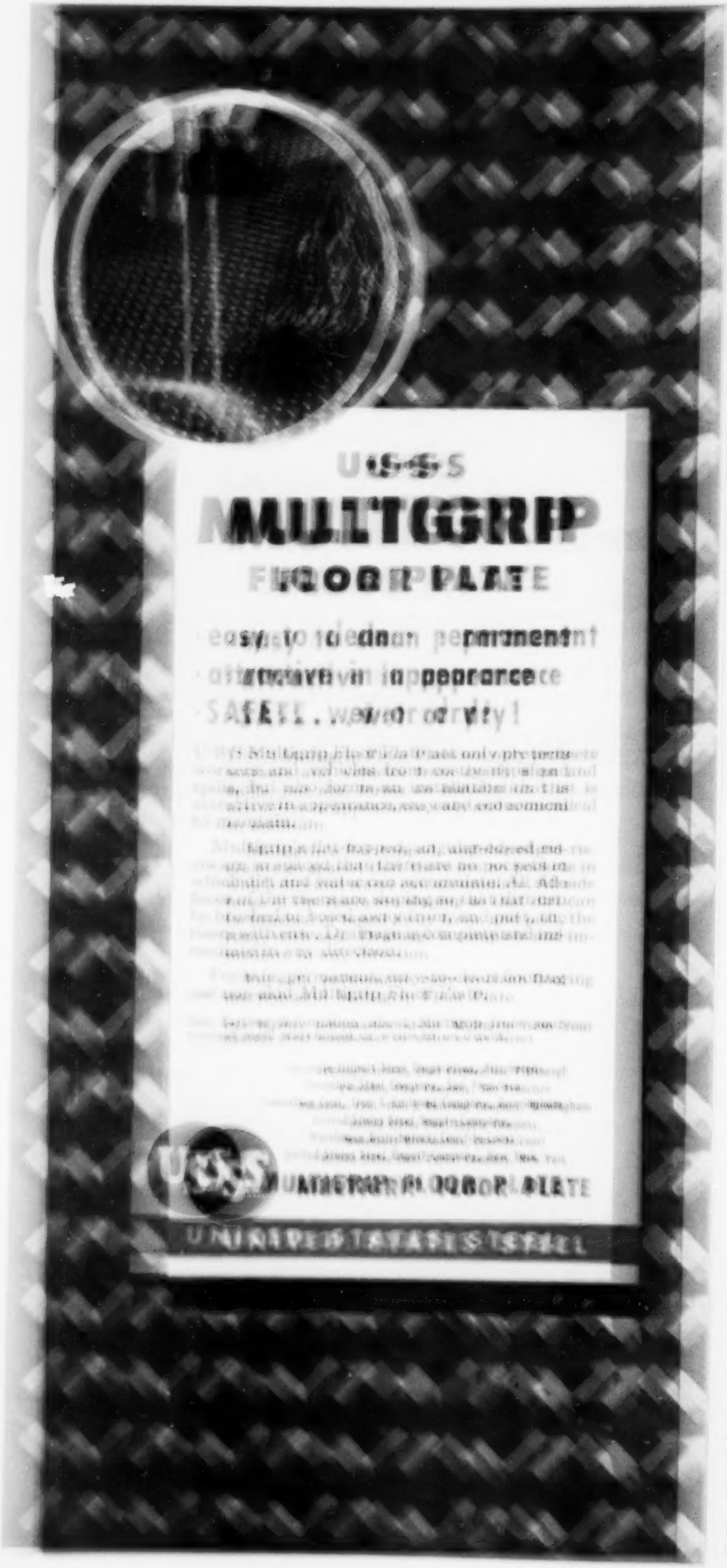
MULTIGRIP
FLOOR PLATE
UNITED STATES STEEL

sheets, cold-finished bars, cold-rolled strip, and tubular goods are whittled down to the vanishing point.

San Francisco—Unbalanced inventories and scarcities of sheets, strip, plates and structurals plague warehouses. Shortages of materials are restricting potential volume.

Seattle—Warehouses report continued scarcity of items critically short for months. Aluminum sheets are on allocation. Plates, wire products and nails are extremely short.

Iron Ore . . .

Iron Ore Prices, Page 107

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During August consumption of Lake Superior ore in the U.S. totaled 7,104,301 tons against 7,329,135 in July and 5,492,141 in August a year ago. Consumption in the year to date totals 52,844,688 tons against 52,344,716 in the like period last year.

Total stocks at furnaces and docks on Sept. 1 were 29,965,663 tons, which compares with 24,107,874 on Aug. 1 and 40,811,232 on Sept. 1 a year ago. On Sept. 1 there were 182 stacks in blast in the U.S. and Canada, a drop of 2 in the month.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

11,600 tons, bank and office buildings, Dallas, Tex., to American Bridge Co., Pittsburgh.

10,000 tons, including bars and miscellaneous steel, power house, Philadelphia Electric Co., Philadelphia, to Bethlehem Steel Co., Bethlehem, Pa.

5000 tons, veterans' hospital, Pittsburgh, to Bethlehem Steel Co., Bethlehem, Pa.; John A. Johnson & Sons, Inc., Brooklyn, general contractors.

2535 tons, contract 43, New Jersey turnpike, Newark, to Harris Structural Steel Co., New York; Franklin Construction Co., New York, general contractor.

1600 tons, office building, Springfield Fire & Marine Insurance Co., Springfield, Mass., to Bethlehem Steel Co., Bethlehem, Pa.; Turner Construction Co., Boston, general contractor.

1300 tons, power plant, Perth Amboy, N. J., to Ingalls Iron Works, Birmingham, Ala.

900 tons, building, American Cyanamid Co., Pearl River, N. Y., to Savary & Glaeser, Inc., Dunellen, N. J.

365 tons, building addition, Edward K. Tryon Co., Philadelphia, to Bethlehem Steel Co.

325 tons, office building, Silver Springs, N. Y., to Bethlehem Steel Co., Bethlehem, Pa., through Wheeler Engineering Co.

300 tons, Hudson Refrigerating building, Jersey City, N. J., to Bethlehem Steel Co., Bethlehem, Pa.

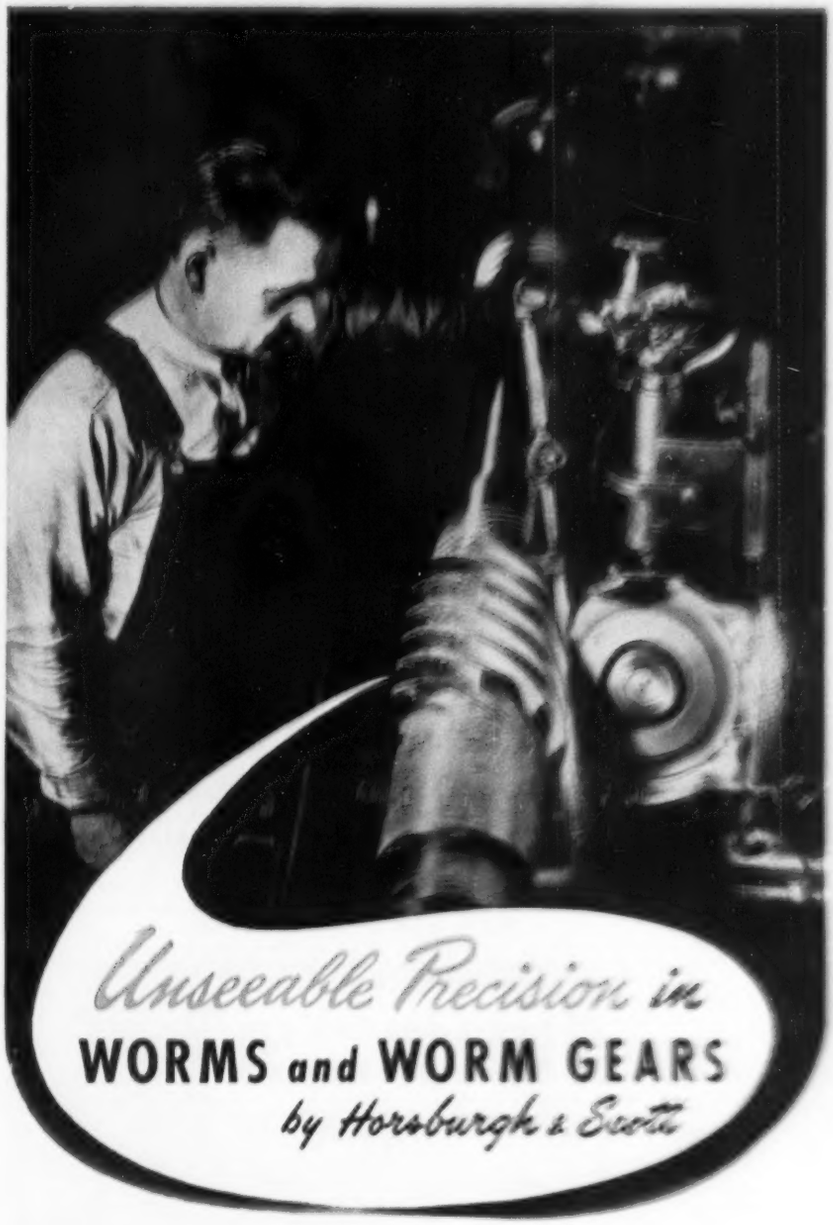
300 tons, plant addition, American Can Co., St. Paul, Minn., to American Bridge Co., Pittsburgh.

250 tons, St. Agnes school, Rockville Centre, N. Y., to Grand Iron Works Inc., New York.

200 tons, factory addition, Fulton, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.

175 tons, addition, open-hearth building, Alan Wood Steel Co., Conshohocken, Pa., to Bethlehem Steel Co.

175 tons, nurses home, state hospital, Norristown, Pa., to Easton Steel Structures Inc., Easton, Pa.



● Here's precision grinding of a hardened steel worm on our exclusively designed worm thread grinder to an unexcelled accuracy of less than 1/1000 of an inch on built indexing and lead . . . assuring perfect thread contour and balance. Yet extreme precision is only one of seven outstanding features of Horsburgh & Scott Worms and Gears . . . you *will see* in their use.

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THE HORSBURGH & SCOTT CO.
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MULTIGRIP
FLOOR PLATE
·easy to clean · permanent
·attractive in appearance
·SAFE...wet or dry!
U·S·S Multigrip Floor Plate not only protects workers and vehicles from costly slips and spills, but also forms an installation that is attractive in appearance, easy and economical to maintain.
Multigrip's flat-topped, angular-edged risers are so spaced that there are no pockets in which dirt and water can accumulate. All side faces of the risers are sloping so that dirt can be brushed or hosed away from, and past, the risers with ease. Drainage is complete and immediate in any direction.
For safe, permanent, easy-to-clean flooring use non-skid Multigrip Floor Plate.
Get further information about Multigrip from your nearest steel warehouse or write to us direct.
Carnegie-Illinois Steel Corporation, Pittsburgh
Columbia Steel Company, San Francisco
Tennessee Coal, Iron & Railroad Company, Birmingham
United States Steel Supply Company,
Warehouse Distributors, Coast-to-Coast
United States Steel Export Company, New York
USS
MULTIGRIP FLOOR PLATE
UNITED STATES STEEL

expected. Pig iron scarcity adds to the strong undertone.

Los Angeles—Mill purchases are limited. Dealers expect higher mill-posted scrap prices next month to encourage flow of remote scrap.

San Francisco—Mills are actively buying and little scrap is piling up in dealer yards. Although the general price level is holding at $23.50 for No. 1 heavy melting, some special deals are reported up to $25 a ton.

Seattle—Mills are receiving sufficient steel scrap for current needs, but high operations may cause a shortage soon. Dealers report no large amount of surplus available. Price levels are unchanged. It is reported German scrap will be brought to the North Pacific at $7.50 per ton (freight), September loading. Two foreign tramps will bring scrap cargoes from the Orient to North Pacific ports.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 106

Pittsburgh — Steelmaking expansion programs under way or contemplated are expected to include installation of additional by-product coke ovens. Production of oven furnace coke is not sufficient to meet expanding requirements, necessitating resumption of beehive operations. Strikes at Diamond Alkali and Semet-Solvay have intensified the growing shortage of oven foundry coke.

Warehouse . . .

Warehouse Prices, Page 107

New York—Warehouses are catching up on deliveries of standard carbon products after being behind two weeks and more in some cases. One reason is that distributors now have less to sell. On cutting orders most still lag four to five weeks. Badly depleted are inventories of sheets, plates and structurals. The outlook for fourth quarter replacement is uncertain.

Philadelphia—Where warehouse sales are lower, lack of steel is the reason. Demand on distributors continues heavy. Outlook for rebuilding stocks is dim.

Cleveland — Distributors are hard pressed to satisfy the demands of their regular customers. They are turning down requests for tonnage coming from distant points. Stocks are badly unbalanced and in sheets, strip and plates are virtually depleted, mill receipts moving to consumers almost as quickly as received.

Cincinnati—Warehouses expect a lean fourth quarter because of shrinking mill shipments. Some fabricators report stocks exhausted. Prices are unchanged except on galvanized sheets.

Chicago—Warehouse demand is intensified by metal users who believe they can augment their mill steel with warehouse-supplied material. Stocks of flat-rolled products are virtually nonexistent. Structural and bar stocks are spotty.

Los Angeles — Since August, distributors shipped 50 per cent more steel than mill receipts. Stocks of

sheets, cold-finished bars, cold-rolled strip, and tubular goods are whittled down to the vanishing point.

San Francisco—Unbalanced inventories and scarcities of sheets, strip, plates and structurals plague warehouses. Shortages of materials are restricting potential volume.

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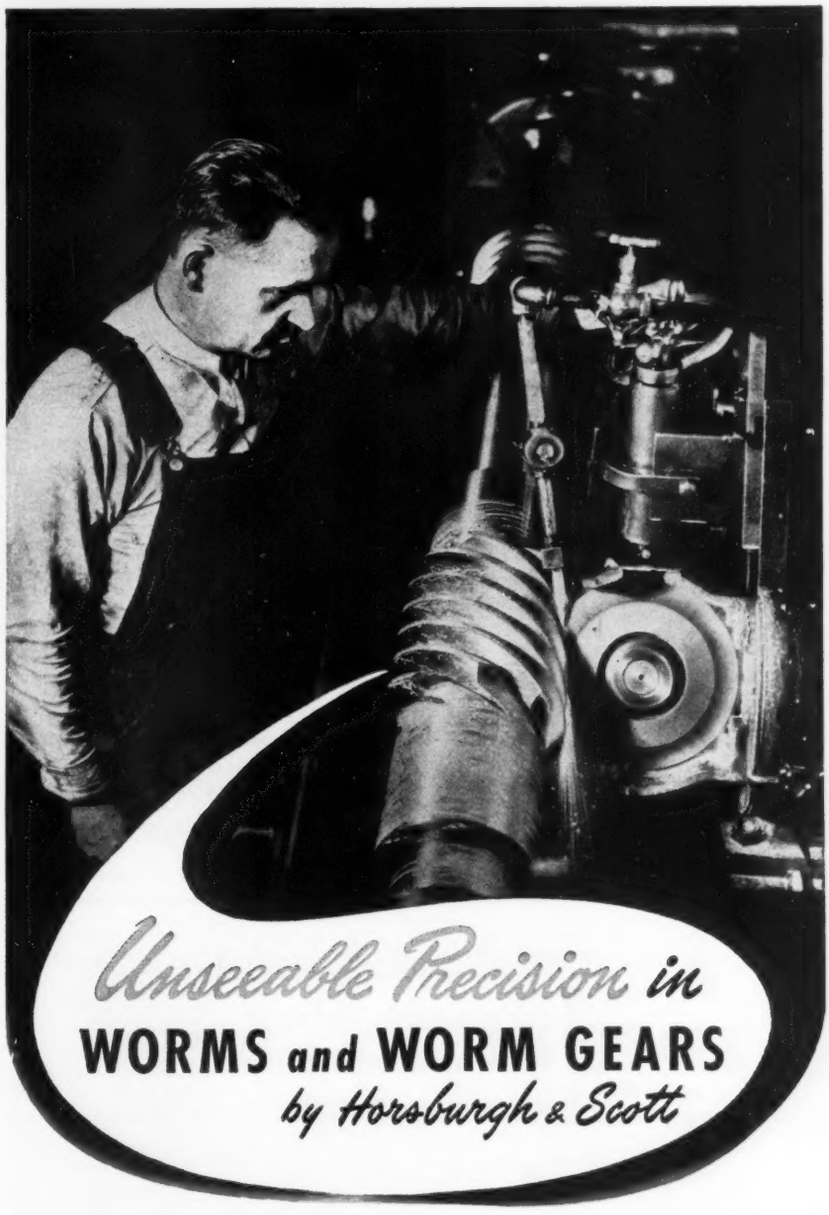

● Here's precision grinding of a hardened steel worm on our exclusively designed worm thread grinder to an unexcelled accuracy of less than 1/1000 of an inch on both indexing and lead . . . assuring perfect thread contour and balance. Yet extreme precision is only one of seven outstanding features of Horsburgh & Scott Worms and Gears . . . you *will see* in their use.

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Do you use Perforated Metal?

If perforated metal is required for any of your products, let Hendrick quote on fabricating it to your specifications. An unsurpassed stock of tools and dies, and ample plant facilities, enable Hendrick to give unexcelled service in furnishing perforated metal with any shape or size of openings, from any commercially rolled metal, in any desired gauge. Write for full information.

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"Shur-Site" Treads and
Armorgrids

A press brake equipped with Wittek No. 6-L Automatic Roll Feed

You Can't Beat WITTEK

Wittek Roll Feeds are made in standard models to meet every requirement in the automatic feeding of strip stock to punch presses or press brakes. The distinguishing feature is their simple and economical method of operation which does away with complicated parts thereby assuring *speed* and *accuracy* in the feeding of various kinds and thicknesses of material.

Wittek Adjustable Reel Stands are designed as companion units to Wittek Automatic Roll Feeds and are available in seven different models to handle *ALL* types of coiled strip stock and wire being fed to punch presses or similar production machinery.

Special units of Wittek Automatic Roll Feeds and Adjustable Reel Stands are engineered to meet unusual requirements.

Write for complete descriptive literature

WITTEK Manufacturing Co.
4328 W. 24th Place
Chicago 23, Ill.

Automatic ROLL FEEDS AND REEL STANDS

150 tons, bridge, New York Central railroad, St. Johnsville, N. Y., to Lackawanna Steel Construction Corp., Buffalo.

STRUCTURAL STEEL PENDING

5300 tons, galvanized steel transmission towers for Seattle light department; Bethlehem Pacific Coast Steel Corp., Seattle, low.

800 tons, two public schools, Garrett county, Maryland; bids in.

550 tons, Oregon state Willamette river bridge, Salem; bids to highway department, Portland, Sept. 29.

500 tons, high school, Upper Darby, Pa., bids Sept. 28.

490 tons, Montgomery county building, Rockville, Md.; bids in.

260 tons, rotary reconstruction and steel stringer bridge, Providence, R. I.; Campanella & Cardi Construction Co., Hillsgrove, R. I., low.

190 tons, underpass, Kansas Avenue N. W., Washington, D. C.; bids Sept. 27, director of highways.

150 tons, three I-beam bridges, Chatham township, Pa.; bids Oct. 13, Harrisburg.

135 tons, steel grid floor replacement, Fore River bridge, Weymouth-Quincy, Mass., design A, 2½-inch grid; 85 tons, design B, 5-inch grid; bids in.

REINFORCING BARS . . .

REINFORCING BARS PLACED

500 tons, Philip Morris Co., Louisville, Ky., to United States Steel Supply Co.

410 tons, Gordon Park seawall, Cleveland, to Builders Structural Steel Co., that city.

400 tons, Sloan Metal Processing laboratory, Massachusetts Institute of Technology, Cambridge, Mass., to United States Steel Supply Co., Boston; Platt Contracting Co., Cambridge, general contractor; Groisser & Shlager Iron Works, Boston, 70 tons, fabricated structural steel, and American Architectural Iron Co., Cambridge, 30 tons, miscellaneous.

325 tons, Salem Ave. bridge, Dayton, O.; to United States Steel Supply Co.

300 tons, Illinois Paint Division, Sears Roebuck & Co., Chicago, to Joseph T. Ryerson & Son Inc., that city.

225 tons, Youth Center building, Seattle, to Northwest Steel Rolling Mills, Inc., Seattle; J. C. Boespflug Co., Seattle, general contract.

185 tons, Euclid-Glenville hospital, Cleveland, to Paterson-Leitch Co., that city.

180 tons, A & P produce warehouse, Cleveland, to Paterson-Leitch Co., that city.

130 tons, state highway project, Okanogan river, Washington, to Northwest Steel Rolling Mills, Inc., Seattle; McKeller Construction Co., general contract.

100 tons, office building Richfield Oil Co., Seattle, to Bethlehem Pacific Coast Steel Corp., Seattle; Lidral Construction Co., Seattle, general contract.

REINFORCING BARS PENDING

2680 tons, also 75 tons other metals, Chief Joseph dam, Columbia river; bids to U. S. engineer, Seattle, Nov. 2.

1000 tons, Miami Valley hospital, Dayton, O.; bids asked.

875 tons, Veterans Administration hospital, Pittsburgh; bids asked.

537 tons, Pennsylvania Department of Highways, proj. LR(9TR6-19-322), Crawford county, Pa.; bids asked.

450 tons, Downtown Auto Park Inc., Minneapolis; bids asked.

450 tons, Town House Inc., Chicago; bids asked.

400 tons, science building, University of Notre Dame, Notre Dame, Ind.; bids asked.

300 tons, Pittsburgh Plate Glass Co., Cleveland; bids asked.

255 tons, mostly mesh, state highway, Lincoln, R. I.; M. A. Gammino Construction Co., Providence, low.

185 tons, elementary school, Huron, O.; bids asked.

170 tons, superstructure, Ford Motor Co., Cleveland; bids asked.

170 tons, swine pavilion, Illinois State Fairgrounds, Springfield, Ill.; bids asked.

165 tons, 24th St. school, Milwaukee; bids asked.

160 tons, 53rd St. school, Milwaukee; bids asked.

160 tons, Kenmore school, Akron; bids asked.

100 tons, 15-mile section west canal, Columbia Basin project; bids to Ephrata, Wash., Oct. 15.

100 tons, grade school, Mound, Minn.; bids asked.

100 tons, breakwater extension, Chicago; bids asked.

PLATES . . .

PLATES PLACED

100 tons or more, 1-million gallon water storage tank, Jacksonville, Fla., to R. D. Cole Mfg. Co., Newnan, Ga., $166,751.

RAILS, CARS . . .

LOCOMOTIVES PLACED

National Railways of Thailand 45 diesel-electric to Davenport Besler Co., Davenport, Ia.

RAILROAD CARS PLACED

Atlantic Coast Line, six lightweight passenger coaches to Budd Company and four lightweight six-double-bedroom—10 roomette sleeping cars to Pullman-Standard Car Mfg. Co.; originally ordered by Chesapeake & Ohio.

Chicago & Eastern Illinois, 25 flats to Thrall Car Co.

Missouri-Kansas-Texas, 500 fifty-ton box, to Pressed Steel Car Co.

Sorocabana Railway of Sao Paulo, Brazil, 51 all-stainless steel passenger cars, including 15 first class coaches, 15 second class coaches, 11 all-double bedroom sleepers, six baggage and five diners to Budd Co., Philadelphia.

The Southern Pacific, 1600 fifty-ton box to Pullman-Standard Car Mfg. Co.

Central of New Jersey, two 3-track and one 2-track car floats to Bethlehem-Staten Island yard, Staten Island, N. Y.

RAILROAD CARS PENDING

Western Pacific, 500 fifty-ton box cars.

RAILS PLACED

Delaware & Hudson, 1232 tons to Bethlehem Steel Co.

Lehigh & New England, 1373 tons to Bethlehem Steel Co.

Richmond, Fredericksburg & Potomac, 7750 tons to Bethlehem Steel Co.

FERROALLOYS

(*Continued from page* 107)

Foundry Ferrochrome: (Cr 62-66%, C 5-7%). Contract, c.l., 8MxD, bulk, 22.0c per lb of contained Cr, c.l., packed 22.9c, ton 24.25c, less ton 26.0c. Delivered. Spot, add 0.25c.

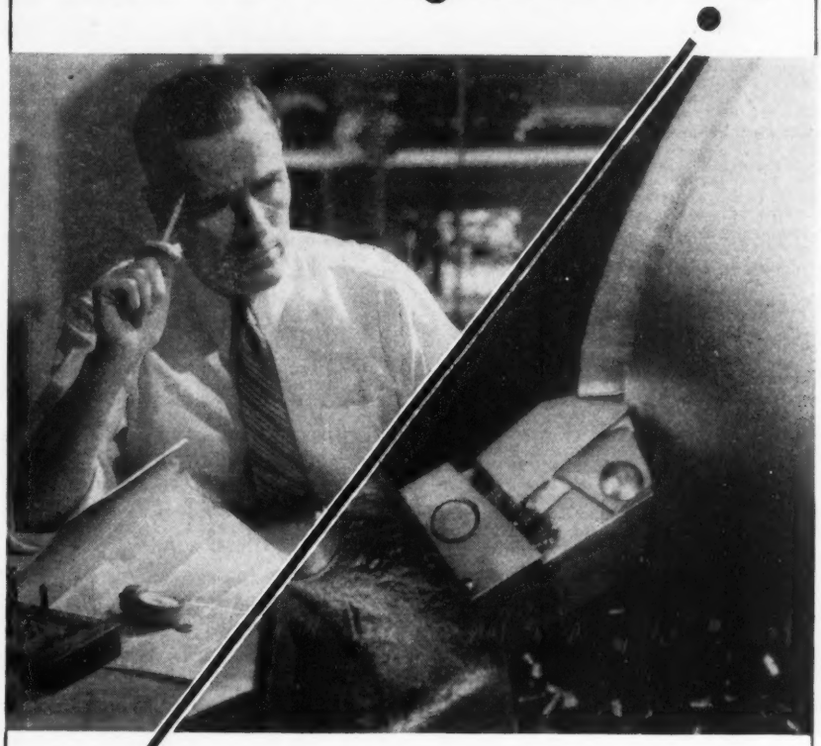
Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max. 0.03% C 31.85c per lb of contained Cr, 0.04% C 29.75c, 0.06% C 28.75c, 0.10% C 28.25c-28.5c, 0.15% C 28.0c, 0.20% C 27.75c, 0.50% C 27.5c, 1% C 27.25c, 1.50% C 27.1c, 2% C 27.0c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

"SM" Low-Carbon Ferrochrome: (Cr 62-66%, Si 4-6%, Mn 4-6%, C 0.75-1.25% max.). Contract, carload, lump, bulk 27.75c per lb of contained chromium, carload, packed 28.85c, ton lots 30.05c, less ton 31.85c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 5c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N. Add 5c for each 0.25% of N above 0.75%.

Chromium Metal: (Min. 97% Cr and 1% Fe). Contract carload, 1" x D; packed, max 0.50% C grade, $1.03 per lb of contained chromium,

When the Going Gets TOUGH



Keep Going with Kennametal

• Are tough jobs slowing you down—hogging cuts from rough forgings . . . cleaning up sandy castings . . . multiple finishing of complex parts . . . precision machining that defies your efforts to hold close tolerances? Are you losing time on tight production schedules, having to replace worn tools frequently?

Use Kennametal—and keep going. Records show that Kennametal has machined up to four times as many pieces per unit of carbide consumed—on similar work under similar conditions.

That means Kennametal costs the user only about one-fourth as much in terms of service delivered. Furthermore—machines keep going—man-hours are more productive.

If the going is tough for you—let one of our engineers demonstrate how Kennametal smoothes out production problems.

KENNAMETAL Inc., Latrobe, Pa.®

MANUFACTURERS OF SUPERIOR CEMENTED CARBIDES AND CUTTING TOOLS THAT INCREASE PRODUCTIVITY

Visit our Exhibit, SPACE 808, National Metal Exposition, Chicago, Oct. 23-27.

ton lot $1.05, less ton $1.07. Delivered. Spot, add 5c.

Silicon Alloys

25-30% Ferrosilicon: Contract, carload, lump, bulk, 17.00c per lb of contained Si; packed 18.40c; ton lot 19.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 11.3c per lb of contained Si, carload packed 12.9c, ton lot 14.35c, less ton 16c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 13.5c per lb of contained Si, carload packed 14.8c, ton lot 15.95c, less ton 17.2c. Delivered. Spot, add 0.8c.

80-90% Ferrosilicon: Contract, carload, lump, bulk, 14.65-15.0c per lb of contained Si, carload packed 15.9c, ton lot 16.9c, less ton 18.05c. Delivered. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max.). Add 0.7c to 85% ferrosilicon prices.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 16.5c per lb of contained Si, carload packed 17.7c, ton lot 18.65c, less ton 19.7c. Delivered. Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.50% max.). Add 0.7c to above 90-95% ferrosilicon prices.

Silicon Metal: (Min. 97% Si and 1% max. Fe). C.l. lump, bulk, regular 19.0c per lb of Si, c.l. packed 20.2c, ton lot 21.1c, less ton 22.1c. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing min. 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 8.65c per lb of alloy, ton lots packed 10.05c, 200 to 1999 lb 10.40c, smaller lots 10.90c. Delivered. Spot up 0.5c.

Briquetted Alloys

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 13.75c per lb of briquet, carload packed 14.45c, ton lot 15.25c, less ton 16.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 10.45c per lb of briquet, c.l. packaged 11.25c, ton lot 12.05c, less ton 12.45c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 10.30c, per lb of briquet, c.l. packaged 11.1c, ton lot 11.9c, less ton 12.8c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.15c per lb of briquet, c.l. packed 6.95c, ton lot 7.75c, less ton 8.65c. Delivered. Spot, add 0.25c.

(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.30c, c.l. packed 7.10c, ton lot 7.90c, less ton 8.80c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) 95.00c per pound of Mo contained, f.o.b. Langeloth, Pa.

Calcium Alloys

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%.) Contract, carload, lump, bulk 19.25c per lb of alloy, carload packed 20.05c, ton lot 21.55c, less ton 22.55c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 17.9c per lb of alloy, carload packed 19.1c, ton lot 21.0c, less ton 22.5c. Delivered. Spot add 0.25c.

Titanium Alloys

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max., Si 4% max., C 0.10% max.) Contract, ton lots 2" x D, $1.40 per lb of contained Ti; less ton $1.45. (Ti 38-43%, Al 8% max., Si 4% max., C 0.10% max.) Ton lot $1.28, less ton $1.35, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $167 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 3-4.5%.) Contract, $183 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

Vanadium Alloys

Ferrovanadium: Open-hearth Grade (Va 35-55%, Si 8-12% max., C 3-3.5% max.). Contract, any quantity, $2.90 per lb of contained Va. Delivered. Spot, add 10c. **Crucible-Special Grades** (Va 35-55%, Si 2-3.5% max., C 0.5-1% max.), $3. **Primos and High Speed Grades** (Va 35-55%, Si 1.50% max., C 0.20% max.) $3.10.

Grainal: Vanadium Grainal No. 1, 93c per lb; No. 6, 63c; No. 79, 45c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.20 per lb contained V_2O_5, freight allowed. Spot, add 5c.

Tungsten Alloys

Ferrotungsten: (70-80%). Contract, 10,000 lb W or more, $2.25 per lb of contained W; 2000 lb W to 10,000 lb W, $2.35; less than 2000 lb W, $2.47. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Contract or spot, 1000 lb or more, $2.90 per lb of contained W; less than 1000 lb W, $3.

Zirconium Alloys

12-15% Zirconium Alloy: (Zr 12-15%, Si 39-43%, Fe 40-45%, C 0.20% max.). Contract, c.l., lump, bulk 6.6c per lb of alloy, c.l. packed 7.35c, ton lot 8.1c, less ton 8.95c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract carload, lump, packed 20.25c per lb of alloy ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

Boron Alloys

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered. Spot, add 5c. F.o.b. Washington, Pa., prices 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min. B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $4.25 per lb contained B, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., frt allowed same as high-carbon ferrotitanium.

Other Ferroalloys

Ferrocolumbium: (Cb 50-60%, Si 8% max., C 0.4% max.). Contract, ton lot, 2" x D, $3.50 per lb of contained Cb, less ton $3.55. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min., C 0.30 max.) ton lots, 2" x D, $2.67 per lb of contained Cb plus Ta, delivered; less ton lots $2.72.

CMSZ Mixes: (No. 4—Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75%, C 3-4.5%; No. 5—Cr 50-56%, Mn 4-6%, Si 13.50-16.0%; Zr 0.75-1.25%, C 3.50-5%). 12 M x D, carload packed 19.0c per lb of material, ton lot 19.75c, less ton 21.0c. Delivered.

Silcaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 43c per lb of alloy, ton lot 45c, less ton 47c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 16.5c per lb of alloy, ton lots 17.50c, less ton 18.5c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.0c per lb of alloy; ton lots 18.0c; less ton lots 19.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 14.25c per lb of alloy; ton lots 15.75c; less ton lots 17.00c, f.o.b., Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al). Lump, bulk, carload 11.00c. Ton lots, bulk 11.50c, packed 11.75c. Less ton lots, packed 12.25c per lb of alloy, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. seller's works, Mt. Pleasant, or Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo, f.o.b. Langeloth and Washington, Pa., furnace, any quantity $1.13.

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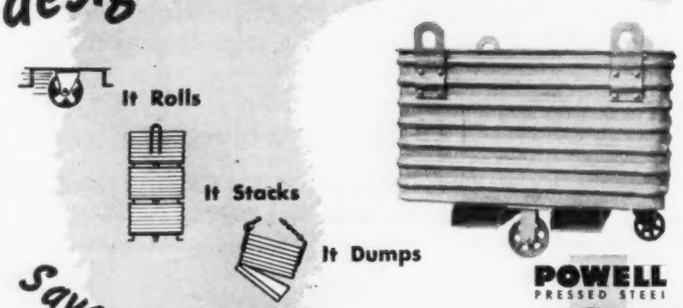

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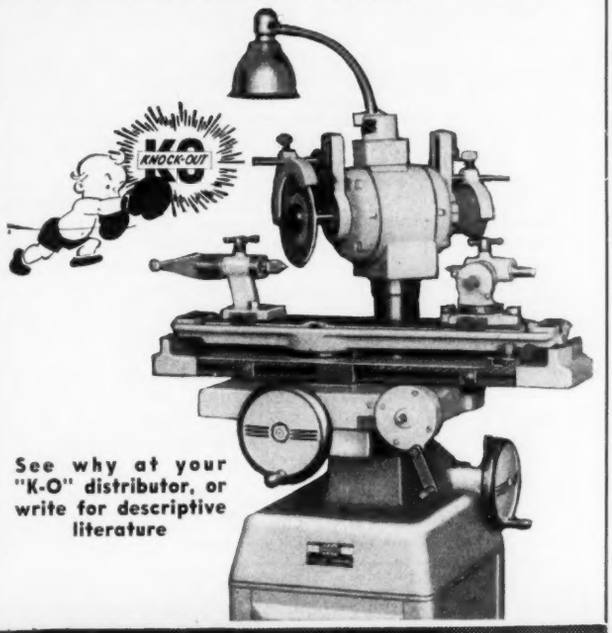

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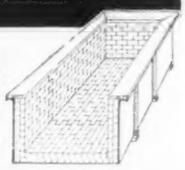

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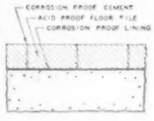

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Metalworking Briefs

CONSTRUCTION, ENTERPRISE ORGANIZATIONAL CHANGES

Arkansas

Westinghouse Electric Corp., Pittsburgh, will add a wing to its lamp plant in Little Rock, Ark. Little Rock construction firm of Ditmars, Dickmann & Pickens was awarded the contract for the expansion, which is scheduled for completion by next April.

California

Caram Mfg. Co., Los Angeles, started construction of a plant in Monrovia, Calif. Facilities for manufacture of rubber cements and adhesives now located at the Los Angeles plant will be moved to the new plant, scheduled for completion by Jan. 1.

California

Packard-Bell Co., Los Angeles, started construction of a $200,000 plant alongside its present plant. The new plant, to double facilities for manufacture of television and radio sets, is scheduled for completion Nov. 15. Butress & McLellan Inc. is general contractor.

California

B. F. McDonald Co., Los Angeles, manufacturer and distributor of industrial safety equipment, started construction of a $250,000 plant at the Los Angeles International Airport tract. Facilities now located in three locations will be moved to the new plant, scheduled for completion by Dec. 15. H. C. Smith Co. is the general contractor.

California

Stauffer Chemical Co., San Francisco, has tentative plans to build a new sulphuric acid plant in Southern California. Details and location of the new unit have not been disclosed.

Florida

Modern Coach Corp., Albany, Ga., received bids for a bus center in Tallahassee, Fla. James A. Stripling & Associates, Child Bldg., is the architect.

Florida

International Mineral & Chemical Co. received low bid from Paul Smith Construction Co., 3103 N. W. 20th St., Tampa, Fla., at $273,865 for an office building in Bartow, Fla. Robert L. Weed, Miami, Fla., is the architect; Norman Dignum, Miami, engineer.

Georgia

City Housing Authority, Moultrie, Ga., received low bid from Delta Construction Co. Inc., Columbia, S. C., at $1,197,767 for low rent housing project; Abreu & Robeson, 22 Marietta St. Bldg., Atlanta, architect.

Illinois

Furnas Electric Co., Batavia, Ill., awarded an $85,000 contract to Carl Sederquist, general contractor, St. Charles, Ill., for construction of a factory building. Frazier & Raftery, Geneva, Ill., is the architect.

Illinois

Richard D. Irwin Inc., Homewood, Ill., awarded a $110,000 contract to Poirot Construction Co., 2001 W. Pershing Rd., for construction of a printing plant.

Illinois

Vulcan Mold & Iron Co., Latrobe, Pa., awarded a contract for erection of two foundry buildings at Lansing, Ill., to Mississippi Valley Structural Steel Co., 1201 N. 25th Ave., Melrose Park, Ill., at an estimated cost of $1 million.

Illinois

Latrobe Electric Steel Co., Latrobe, Pa., awarded a $135,000 contract to LaSalle Construction Co., 343 S. Dearborn St., Chicago, for construction of a factory and office building additions in Melrose Park, Ill.

Illinois

Central Waxed Paper Co., 5659 Taylor St., Chicago, will build a $1.5 million plant at 5070 Roosevelt Rd., Chicago. The new factory will double the space it now occupies for manufacture of printed and plain waxed and cellophane wrappers. New equipment costing $200,000 will be installed. The building is designed by Battey & Childs, Chicago engineer and architect. Completion of the plant is scheduled for early next year.

Illinois

International Minerals & Chemical Corp., Chicago, has plans for a new central research laboratory near Chicago.

Kansas

Fairbanks, Morse & Co., 680 S. Michigan Ave., Chicago, awarded a contract to Stone & Webster Engineering Corp., 33 S. Clark St., Chicago, for design and construction of a $5 million scales factory on Highway No. 132 east of Turner street, Turner, Kans.

Maryland

E. A. Kaestner Co., 516 N. Calvert St., Baltimore, manufacturer of dairy, pharmaceutical and beverage plant equipment, and general sheet metal fabricator, has the former plant of National Can Retinning Co., 5401 Pulaski Highway, Baltimore, and awarded a contract for an office addition. The company plans to move to this new location before the end of the year.

Maryland

Maryland Oxygen Co., 1700 S. Newkirk St., Baltimore, changed its name to **National Cylinder Gas Co.,** of which it was a subsidiary. General offices of the parent company are in Chicago.

Maryland

Diecraft Inc., with main plant at 1500 Guilford Ave., Baltimore, began erection of a new plant on Pulaski highway and Golden Ring road, that city. Harry A. Dundore is owner.

Maryland

Aircraft Armaments Inc. was organized by a group of aircraft experts and established office and drafting quarters at 4415-4417 Reisterstown Rd., Baltimore. The company plans the development, design and manufacture of various types of aircraft armament and associated equipment. It is understood the company will manufacture by contract, or dispose of its developments directly to aircraft firms, or both.

Maryland

Alexander Milburn Inc., 1231-1245 Ridgely St., Baltimore, acquired 6000 square feet for the manufacture of acetelyne cutting and welding apparatus. The company was recently organized to succeed the old Balti-

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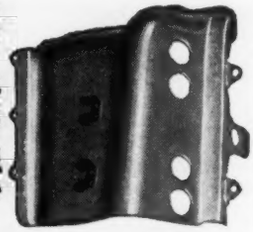

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Maryland

Hood Engineering & Mfg. Co., 4209 Ashland Ave., Baltimore, producer of sheet metal items, plans to build an addition to its fabricating facilities.

Maryland

Hill-Chase Steel Co., 6311 Erdman Ave., Baltimore, began work on a new warehouse at 6501 Erdman Ave.

Maryland

Danko Pattern & Mfg. Co., 4800 E. Wabash Ave., Baltimore, maker of wood and metal patterns and models, is building a one-story plant addition.

Maryland

John M. Reiser Sons, 1900 S. Charles St., Baltimore, is installing additional equipment in space already available, which will permit a 50-per cent increase in output of wood and metal containers.

Maryland

Instrument Corp., 4 N. Central Ave., Baltimore, manufacturer of meteorological instruments and accessories, acquired the building at 1230 E. Baltimore St. for use both for manufacture and storage.

Maryland

Sherwood Tool & Die Co., Baltimore, established a plant at 2243 Sherwood Ave., that city. The firm will specialize in precision tools and dies, but will also carry on a general machine shop operation.

Massachusetts

Foxboro Co., Foxboro, Mass., opened a branch office at 214 W. Tenth St., Wilmington, Del., under the managership of Kenneth L. Barton. Earlier this year a Foxboro Co. office was opened at 225 S. Fifth St., Minneapolis, with Robert C. Cahill as resident engineer.

Michigan

Quaker Chemical Products Corp., Conshohocken, Pa., awarded contracts to increase its plant and storage facilities in Detroit by approximately 50 per cent. Completion of the expansion is scheduled for the end of this year.

Michigan

Construction has been completed by **Mid-West Abrasive Co.,** Owosso, Mich., on an additional manufacturing plant in Owosso which will be in operation within 60 days. The company also plans opening another factory branch in High Point, N. C.

Michigan

De Laval Steam Turbine Co., Trenton, N. J., appointed R. M. Sorlie Co., Kalamazoo, Mich., as a sales representative to handle De Laval sales in the western half of the lower peninsula of Michigan.

New Jersey

Sier-Bath Gear & Pump Co., North Bergen, N. J., appointed the following companies as representatives for the Sier-Bath Gear coupling: J. R. Ruddock & Associates, 7001 N. Clark St., Chicago; Volco Co., 622 McKnight Bldg., Minneapolis; and W. B. Conrad Co., 506 Curtiss Bldg., Detroit.

New York

Work has begun on construction of an addition to the plant of **Van der Horst Corp. of America,** Olean, N. Y. The building will be a processing plant for iron plating of diesel engine cylinders, for locomotives, tugboats and stationary engines.

New York

Beals, McCarthy & Rogers Inc., Buffalo steel warehouse firm, opened its new $750,000 headquarters at South Park avenue and Katherine street after doing business for more than 100 years in downtown Buffalo.

Ohio

Pressed Steel Products Co., 1374 E. 12th St., Cleveland, was formed to manufacture and distribute tools and other metal products. Incorporators are E. P. Schneider, E. P. Stocker and W. D. Ginn.

Ohio

Ridgeway Ordnance Inc., Cincinnati, was incorporated by C. M. Leslie, C. H. Woest and L. McGhee to deal in metals and metal products.

Ohio

Salem Tool Co. is erecting a $40,000 addition to its plant in Salem, O., which will be completed this fall. Production and employment will be increased.

Ohio

S & S Tool Co., 32 N. Western Ave., Dayton, O., will double plant facilities with erection of an industrial building on Gettysburg avenue.

Ohio

Ohio Farm Bureau Cooperative Association, Columbus, O., has plans for construction of a $2 million catalytic cracking plant for its subsidiary, Louisville Refining Co., Louisville.

Ohio

Plaskon Division, **Libby-Owens-Ford Glass Co.,** Toledo, O., plans a plant addition on Glendale avenue, that city.

Ohio

Save Electric Co., Toledo, O., started a $250,000 expansion of manufacturing facilities including construction of a new building at 615 Front St.

Ohio

Pennsylvania Railroad is preparing to construct a $300,000 fireproof warehouse on the road's property at Reading road and Elsinore avenue.

Ohio

Glass Fibers Inc., Toledo, O., plans a $2.5 million expansion program which includes purchase and equipping of Defiance Machine Works, Defiance, O., and expansion of facilities at its plant in Waterville, O.

Ohio

Logan-Hocking Co., Cleveland, was incorporated by James W. Huffman, former U. S. Senator from Ohio, Margaret E. Huffman and Martha Okey to manufacture and distribute plant equipment, tools and industrial supplies.

Ohio

O. K. Bearing Co. Inc., Cincinnati, was organized by Ralph J. Belcher, Linwood avenue, Cincinnati, to carry on a general distribution of all types of manufactured bearings, friction and nonfriction. Incorporators are Mr. Belcher, M. Jane Sheridan and O. G. Spangenberg.

Ohio

Republic Steel Corp., Cleveland, plans a $150,000 aerial pipeline across the Cuyahoga river to carry steam and gas products between Republic plants on opposite sides of the river.

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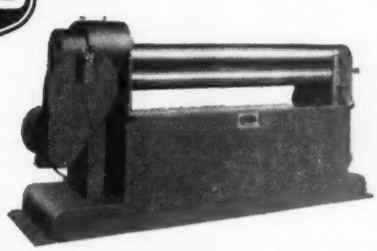
450	48" X 12 GA.	505	60" X 10 GA.	605	60" X 1/4"
462	60" X 14 GA.	506	72" X 12 GA.	606	72" X 3/16"
474	72" X 16 GA.	508	96" X 16 GA.	608	96" X 10 GA.



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Barnes #3 Horiz. 3" bar
P & H type Horiz., 4" bar
Defiance #6, 4½" bar,
Heald #44 Boremotic, 3 heads, LATE TYPE

TURRET LATHES

Brown & Sharpe #4
Warner & Swasey #1A, Saddle type, New 1941
Warner & Swasey #2A, Ram type, new 1941
Warner & Swasey #2A, Univ.
Warner & Swasey #4, Univ.
J & L 2¼" x 24" Hartness Flat Turret
Acme 2¼" x 26" Flat turret
J & L 3½ x 32 Flat turret
J & L 3" x 36" Flat turret
Gisholt 21"
Gisholt #4 Simplified Ram type, NEW 1942
Foster #7, Geared Head
Simmons #2B Micro Speed Turret lathe

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Cincinnati 3-36 Plain Hydromatic Miller
Van Norman #118 Bed Type Production Miller
Van Norman #36, Ram type Miller, New 1941
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Brown & Sharpe #3B Heavy, Plain Miller, SO
Cincinnati #3 High Power Plain Miller
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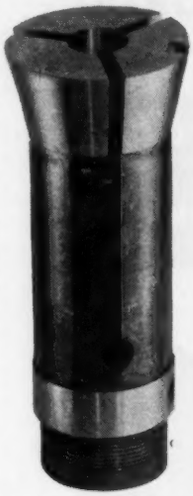

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Hoppers, Twin, All-Steel, 50-Ton, Side Dump
Hoppers, Triple, All-Steel, 70-Ton, Cross Dump
Ore Hopper, All-Steel, 50-Ton, Center Dump
Tank, 8,000-Gallon, Class II
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End Dump, 10-Yd., 30-Ton, Lift Door
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Gasoline—33-Ton
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Gasoline-Electric—35-Ton
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HENRY & WRIGHT PRESSES
10 to 100 Tons
Also Steel Sheets, Strip, Coil, Bar, Wire, etc.
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Progressive, press type, serial No. X1812. 250 KVA, 60 cycle, 440 volts, with weltronic controls. Late type. Price $2,250.00
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HAMMER, Nazel 5-N, 6" x 6", M.D.
KEYSEATERS, Nos. 1 and 2 Baker, M.D.
MILLERS, Plain Nos. 3 K & T and 4 Cin.
MILLERS, Vertical Nos. 3 & 4 Cin.
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METALLURGICAL EXECUTIVE
Graduate engineer in middle forties with over twenty years of steel plant experience. Has directed all phases of process metallurgy, statistical quality control, heat treatment, research and development. Prefers connection with a steel consumer or small producer. Reply to Box 153, STEEL, Penton Bldg., Cleveland 13, O.

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Help Wanted

WANTED: SUPERINTENDENT
One who has served his time as machinist first class. Familiar in job shop, capable of estimating hours on jobs. Some drafting. A splendid opportunity for a capable man to expand plant and advance accordingly. With a long established firm in a small town. Apply by letter, giving full details of your qualifications. Write Box 152, STEEL, Penton Bldg., Cleveland 13, O.

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SALARIED POSITIONS $3,500-$35,000. IF you are considering a new connection communicate with the undersigned. We offer the original personal employment service (40 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details. R. W. Bixby Inc., 110 Dun Bldg., Buffalo 2, N. Y.

Help Wanted

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Graduate engineer, with knowledge of mechanical, structural and electrical construction with at least 10 years experience in same or similar position. Prefer man now employed in some phase of steel industry, with proven supervisory ability. Give age, qualifications and salary requirements in first letter. Box 151, STEEL, Penton Bldg., Cleveland 13, Ohio.

WANTED: MAN EXPERIENCED IN MANUfacture of tempered spring steel strip and its distribution who is interested in sales to take charge of sales of this material for a prominent Chicago warehouse. Good salary plus commission on total sales. Write Box 149, STEEL, Penton Bldg., Cleveland 13, O.

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NOW you can

BRIGHT-ANNEAL STAINLESS

on a continuous production basis, with The

SARGEANT & WILBUR

Controlled Atmosphere

CONVEYOR FURNACE

PARTS MADE OF STAINLESS can be

BRIGHT-ANNEALED,

BRIGHT-HARDENED, or

BRIGHT-BRAZED without oxidation . . . they come out scale-free, bright, and clean. No pickling required, no tumbling, no sand blasting.

With our special S. & W. alloy for bright-brazing stainless, the color matches the metal; resists dulling; and the joint is practically invisible. *Gold and silver parts* are *soldered* in the same continuous-production furnace with equal success.

Your samples processed free. If you want to see some of your own work bright-annealed, bright-hardened, or bright-brazed in a *conveyor furnace*, send us samples and specifications.

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Company .....

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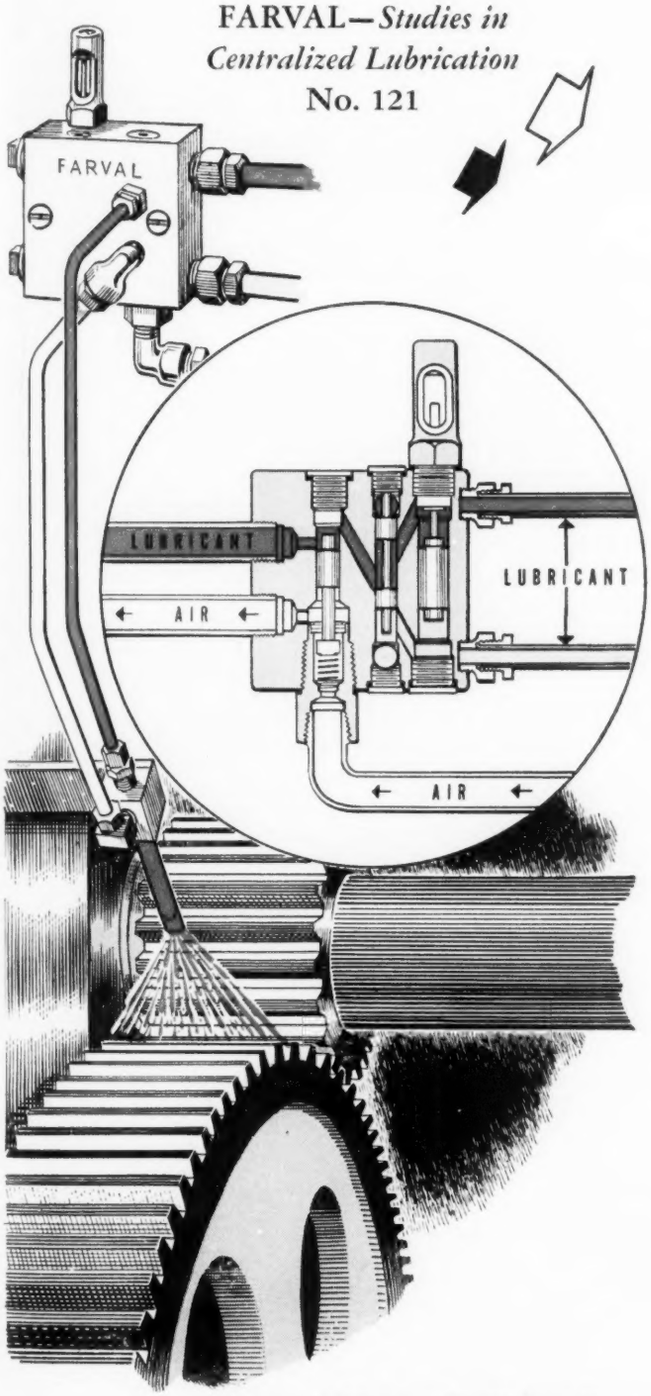
FARVAL—*Studies in Centralized Lubrication* No. 121

New Farval Spray Valve

meters lubricants to slide surfaces and open gearing



CONTROLLED spraying of lubricant on open gearing, slide surfaces, etc., is practical with the new Farval Spray Valve.

By an ingenious adaptation of the familiar Farval Dualine Valve, either grease or oil is sprayed through a nozzle—on any desired area, in any desired amount, and at any desired interval. The new spray valve can be added at any point in a regular Farval Dualine System where compressed air is available—or a complete system may consist entirely of spray valves, served by either manual or automatic pumping unit.

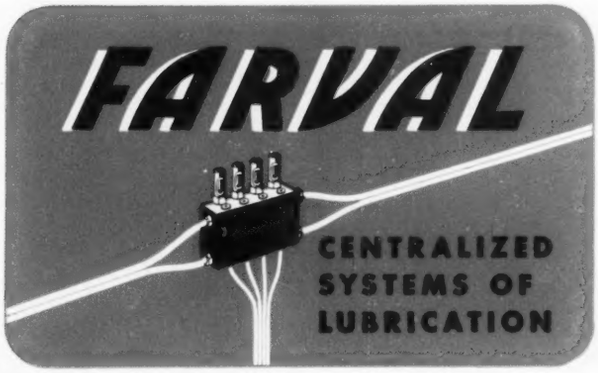
Compressed air from the supply line is directed through the spray valve, which meters air to the delivery nozzle just as lubricant is metered. By a unique arrangement, the lubricant valve also turns on and shuts off the air. Thus the quantity of air used is limited to the amount needed to spray each delivery of oil or grease, without exhausting or reducing pressure. Positive cut-off of lubricant by the Farval valve after each delivery eliminates bleeding from the nozzle—no waste, no mess, no trouble.

The Farval Spray Valve has been thoroughly tested in service and is now in use on a wide variety of machines and equipment. It has demonstrated its ability to supply lubricant efficiently and economically to open gearing, slide surfaces, in fact, wherever a standard Farval Dualine closed system is not readily adaptable.

Write for a copy of Farval Spray Valve Bulletin No. 60 for a full description, with illustrative diagrams and installation data. The Farval Corporation, 3270 East 80th Street, Cleveland 4, Ohio.

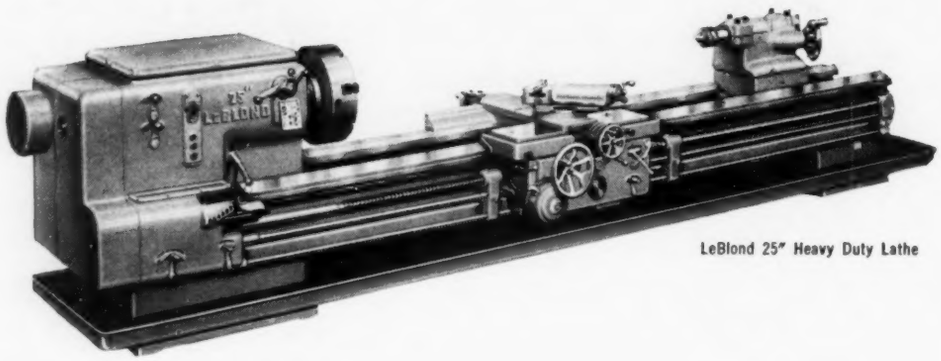
Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.

When you attend the Iron and Steel Engineers Show at Cleveland Public Auditorium, Sept. 26-29, be sure to stop at Farval Booths 244-245-246 to see this new Spray Valve in operation.



we mesh fewer gears to give you greater power on...

12"
14"
16"
20"
25"
32"



LeBlond 25" Heavy Duty Lathe

LeBLOND HEAVY DUTY LATHES

No-load Friction HP
20" Heavy Duty Lathe
(20 HP Motor Standard)

LOW RANGE		HIGH RANGE	
Spindle RPM	Friction HP	Spindle RPM	Friction HP
9	.56	18	.75
12	.60	23	.83
16	.64	31	.94
20	.71	39	1.09
26	.49	50	.75
34	.53	66	.83
44	.60	85	1.01
57	.71	110	1.24
71	.68	137	.94
92	.64	178	1.16
119	.71	230	1.50
154	1.05	297	1.91
191	.98	369	1.80
248	1.24	480	2.40
321	1.61	620	3.15
415	2.02	800	4.13

The headstock design of LeBlond Heavy Duty Lathes incorporates the free-running principle, with hardened and ground steel gears.

Result? Fewer gears in mesh at any given spindle speed to minimize no-load friction horsepower. More *smooth* power for your production work. Longer life from your LeBlond Heavy Duty Lathe.

Sixty-three years of machine tool leadership stand behind LeBlond's complete line of 76 lathe models to give you day-in, day-out dependability. Your LeBlond distributor will tell you about our latest models. Call him or write—

THE R. K. LEBLOND MACHINE TOOL COMPANY
Cincinnati 8, Ohio.

NOTE: *LeBlond also builds huge 40" and 50" Heavy Duty Engine Lathes.*

LeBLOND
Heavy Duty

World's largest builder of a complete line of lathes.